Research Product 91-12

Survey Costs and Errors: User's Manual for the Lotus 1-2-3 Spreadsheet

April 1991

Manpower and Personnel Policy Research Group
Manpower and Personnel Research Laboratory

U.S. Army Research Institute for the Behavioral and Social Sciences

U.S. ARMY RESEARCH INSTITUTE
FOR THE BEHAVIORAL AND SOCIAL SCIENCES

A Field Operating Agency Under the Jurisdiction of the Deputy Chief of Staff for Personnel

EDGAR M. JOHNSON
Technical Director

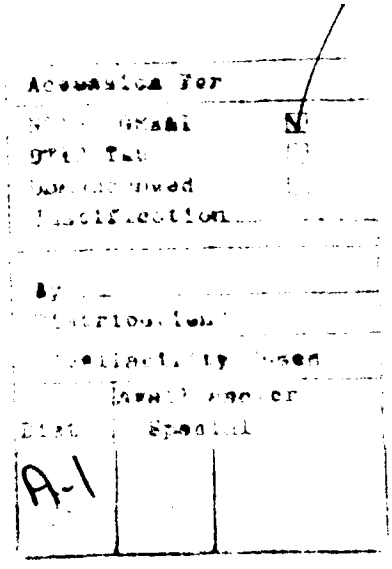
JON W. BLADES
COL, IN
Commanding

Research accomplished under contract for
the Department of the Army

Dr. Eugene Borgida & Associates, University of Minnesota

Technical review by

Curtis L. Gilroy
Mary Sue Hay



NOTICES

FINAL DISPOSITION: This Research Product may be destroyed when it is no longer needed. Please do not return it to the U.S. Army Research Institute for the Behavioral and Social Sciences.

NOTE: This Research Product is not to be construed as an official Department of the Army document, unless so designated by other authorized documents.

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1a. REPORT SECURITY CLASSIFICATION Unclassified	1b. RESTRICTIVE MARKINGS --
2a. SECURITY CLASSIFICATION AUTHORITY --	3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution is unlimited.
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE --	
4. PERFORMING ORGANIZATION REPORT NUMBER(S) --	5. MONITORING ORGANIZATION REPORT NUMBER(S) ARI Research Product 91-12
6a. NAME OF PERFORMING ORGANIZATION Dr. Eugene Borgida & Associates 6b. OFFICE SYMBOL (If applicable) --	7a. NAME OF MONITORING ORGANIZATION U.S. Army Research Institute
6c. ADDRESS (City, State, and ZIP Code) University of Minnesota 75 East River Road Minneapolis, MN 55455	7b. ADDRESS (City, State, and ZIP Code) 5001 Eisenhower Avenue Alexandria, VA 22333-5600
8a. NAME OF FUNDING/SPONSORING ORGANIZATION U.S. Army Research Institute for the Behavioral and Social Sciences 8b. OFFICE SYMBOL (If applicable) PERI-R	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER DAAL03-86-D-0001
8c. ADDRESS (City, State, and ZIP Code) 5001 Eisenhower Avenue Alexandria, VA 22333-5600	10. SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO.: 62785A PROJECT NO.: 791 TASK NO.: 2105 WORK UNIT ACCESSION NO.: C7

11. TITLE (Include Security Classification)
Survey Costs and Errors: User's Manual for the Lotus 1-2-3 Spreadsheet

12. PERSONAL AUTHOR(S)
McGuire, Dennis P.

13a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT (Year, Month, Day)	15. PAGE COUNT
Final	FROM 90/05 TO 91/03	1991, April	

16. SUPPLEMENTARY NOTATION
This research was performed under subcontract from Battelle Memorial Institute, 505 King Ave., Columbus, OH 43201. Contracting Officer's Representative, Timothy W. Elig.

17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)		
FIELD	GROUP	SUB-GROUP			
05	09		Survey	Survey costs	Survey design
05	08		Sampling	Sampling errors	Lotus 1-2-3
			Recruiting	Spreadsheet	User's manual

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

This report is a user's guide for a prototype spreadsheet program written in Lotus 1-2-3 (Version 3.1) to estimate survey costs and errors. Input to the spreadsheet includes basic survey parameters, underlying costs, and estimates of time needed to perform survey tasks. Users can select the survey sampling plan, method of survey administration, survey medium, and other aspects of the survey project. Output of the program is graphical. The spreadsheet was created to apply to surveys of U.S. Army recruits or prospects, but can be used in nonrecruiting survey situations as well. Appendixes contain the code necessary to build the spreadsheet.

This report is the second of two reports on this project. The first (Borgida, Sullivan, McGuire, & DuBois, 1991, ARI Technical Report 928) contains the technical report that discusses the recruiting process, analyses of seasonality in ongoing surveys of accessions, and a general model of survey costs and errors.

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT ☐ UNCLASSIFIED/UNLIMITED ☒ SAME AS RPT. ☐ DTIC USERS	21. ABSTRACT SECURITY CLASSIFICATION Unclassified
22a. NAME OF RESPONSIBLE INDIVIDUAL Mary Sue Hay	22b. TELEPHONE (Include Area Code) (703) 274-5610 22c. OFFICE SYMBOL PERI-RG

DD Form 1473, JUN 86 *Previous editions are obsolete.*

SECURITY CLASSIFICATION OF THIS PAGE
UNCLASSIFIED

Research Product 91-12

Survey Costs and Errors: User's Manual for the Lotus 1-2-3 Spreadsheet

Dennis P. McGuire
University of Minnesota

Manpower and Personnel Policy Research Group
Curtis L. Gilroy, Chief

Manpower and Personnel Research Laboratory
Zita M. Simutis, Director

U.S. Army Research Institute for the Behavioral and Social Sciences
5001 Eisenhower Avenue, Alexandria, Virginia 22333-5600

Office, Deputy Chief of Staff for Personnel
Department of the Army

April 1991

Army Project Number
2Q162785A791

Manpower, Personnel, and Training

FOREWORD

The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) conducts research to enhance recruiting of Army personnel and to develop more cost-effective recruiting policies and practices for the Army. Survey research is an important source of information to achieve these objectives. This user's manual documents research to develop a prototype spreadsheet model to examine the tradeoffs between survey costs and sampling errors under alternative sample survey designs.

This work is part of the mission of the Manpower and Personnel Policy Research Group (MPPRG) to conduct research to improve the Army's recruiting capabilities. The project was prioritized by the U.S. Army Recruiting Command (USAREC) Command Studies Advisory Group, and requested by Colonel Heimericks, Director of Program Analysis and Evaluation, USAREC. Preliminary results were briefed to Major Bradford, Advertising Research and Analysis, USARCPAE, on 20 September 1990.

The results reported here will aid USAREC in designing the best survey sampling methods. They will ensure that surveys of Army recruits and prospects provide the most accurate information, in the most cost-effective manner, for Army policy makers and personnel planners.

EDGAR M. JOHNSON
Technical Director

SURVEY COSTS AND ERRORS: USER'S MANUAL FOR THE LOTUS 1-2-3 SPREADSHEET

EXECUTIVE SUMMARY

Requirement:

One important approach to gathering information about recruits' and potential recruits' attitudes has been the use of prospect and recruit surveys. To ensure that inferences based on survey information are accurate and reliable, surveys need to employ scientific sampling designs. In addition, practical considerations dictate that the financial costs of surveys be balanced against possible errors from sampling. A tool is needed to facilitate examining the possible tradeoffs between survey costs and sampling errors, given alternative research designs.

Procedure:

A general approach to specifying costs and errors for specific combinations of survey methods and sampling strategies was developed and applied to four points of the recruitment process: appointments, applications, contracts, and accessions. A prototype spreadsheet program was then developed, based on the general model and using information gathered from the recruiting literature, analyses of data from ongoing surveys of accessions, and interviews with U.S. Army Recruiting Command (USAREC) and U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) personnel involved in the design of survey research efforts.

Findings:

A prototype spreadsheet program was written in Lotus 1-2-3 (Version 3.1) to estimate survey costs and errors. Input to the spreadsheet includes basic survey parameters, underlying costs, and estimates of time needed to perform survey tasks. Users can select the survey sampling plan, method of survey administration, survey medium, and other aspects of the survey project. Output from the program is graphical, and may be viewed on screen or exported for use in other software applications.

Utilization of Findings:

The prototype spreadsheet provides a tool for use by survey designers in USAREC and ARI. It will allow users to assess various approaches to gathering survey information and will aid and support decisions about specific survey designs.

SURVEY COSTS AND ERRORS: USER'S MANUAL FOR THE LOTUS 1-2-3 SPREADSHEET

PREFACE

A main goal of this project has been to create a tool--a Lotus 1-2-3 spreadsheet--that will make it easier to estimate time, cost, and sampling errors associated with a survey in the planning stage, and to create graphs summarizing predicted survey costs and errors. The goal of this user's manual is to make it easier to use the spreadsheet.

Individuals who need a basic understanding of the spreadsheet function should read the Introduction and the Survey Spreadsheet Basics sections of the report. The Spreadsheets Basics section describes the spreadsheet menu structure and the design of the cost-estimation program and explains what "survey sampling error" means.

A regular user of the spreadsheet will need to understand the Details of the Survey Spreadsheet section and will want to read hints in the Survey Spreadsheet Tips and Traps section. The regular user will also make continual use of the appendixes, which reproduce the spreadsheet menu structure, itemize the data entry fields, and present and describe the algebraic formulas used in the spreadsheet.

A very competent Lotus 1-2-3 user will be able to modify the spreadsheet program to meet his or her own needs for specific projects. The details presented in the appendixes, along with the spreadsheet itself, should provide enough information to allow customization. Substantial risks do exist when modifying a program written by another person, however, so such a task should not be undertaken casually.

Completing this project would have been much more difficult, if not impossible, without the assistance of a variety of people. David Dubois at Personnel Decisions Research Institute, Dr. John Sullivan at the University of Minnesota, Dr. Eugene Borgida at the University of Minnesota, and I formed the primary research team. We analyzed data from the U.S. Army New Recruit Survey, examined the recruiting literature in detail, investigated survey methodology as related to Army recruiting, and completed this spreadsheet. All people involved deserve recognition for their work.

Dr. Timothy Elig and Mary Sue Hay at the U.S. Army Research Institute for the Behavioral and Social Sciences provided ongoing feedback, criticism, and support. Major Bradford of the U.S. Army Recruiting Command provided comments that strengthened the spreadsheet and made it more usable. Thanks are due to those people for their help. Any errors in the spreadsheet or in this user's manual are my own responsibility, of course.

-- Dennis P. McGuire

SURVEY COSTS AND ERRORS: USER'S MANUAL FOR THE LOTUS 1-2-3 SPREADSHEET

CONTENTS

SURVEY COSTS AND ERRORS:
USER'S MANUAL FOR THE LOTUS 1-2-3 SPREADSHEET

Introduction

This user's manual documents a spreadsheet written as part of a scientific services agreement, Battelle Delivery Order No. 2044. The spreadsheet was written in Lotus 1-2-3 (rel. 3.1) and estimates the dollar costs and sampling errors of conducting a survey at different points of the U.S. Army recruiting process.

The spreadsheet as designed applies to a broader range of survey situations than the Army recruiting process alone. It can be used by people with a minimum of spreadsheet experience and should provide good estimates of costs and errors associated with a survey project. As is the case with any computer program, however, the quality of the output depends upon the quality of the input. Total project costs and errors will be accurate only to the degree that estimates of individual costs and times needed for the project are accurate, but if precise estimates are made of the costs of individual components the overall cost estimates should be quite good.

The purpose of this spreadsheet is to provide an easy way to estimate project costs and sampling error for a survey that is being planned. Menus are provided for entering survey cost and time estimates and for specifying the type and number of survey items, total number of surveys to be completed, and other relevant project information. The spreadsheet was designed to meet the needs of the United States Army Recruiting Command, which may wish to survey recruits or prospective recruits either at the time of their initial appointment with a Recruiter, when they apply for enlistment, when they sign a contract, or at the time of accessioning. The spreadsheet is appropriate for use in a wide variety of additional surveying situations since it allows the user to select between four methods of survey administration and with any of three sampling methods to select survey respondents.

Methods of survey administration:

- Administration to large groups of respondents;
- Surveying through the mail;
- Telephone interviewing; and
- Microcomputer-administered surveying.

Survey sampling methods:

- Simple random sampling;
- Stratified sampling;
- Cluster sampling.

The spreadsheet user can also estimate costs of using optically-scannable survey booklets, paper-and-pencil survey booklets, or online (computer) data capture, when appropriate.

Results from cost and error calculations are displayed as graphs while running the spreadsheet program. These graphs can also be printed or saved as files for transport to other microcomputer applications (such as word processors). Five different combinations of variables can be graphed with this program:

Total survey cost versus number of completed surveys;
Total survey cost for different survey administration methods;
Per-respondent survey cost versus number of completed surveys;
Per-respondent survey cost for different survey administration methods; and
Survey sampling error versus number of completed surveys.

The graphs created by this spreadsheet allow up to six plots per graph. As a result, alternative project specifications can be compared on the same graph. One example would be to compare sampling error versus number of completed surveys, and to plot that result separately on the same graph for each of the four survey administration methods.

The rest of this document tells how to run the spreadsheet. Both general information and specific comments are provided about the spreadsheet. The text of this manual describes the spreadsheet and how to use it. Details of operation are presented in the appendices, and we expect that regular users will make regular use of the appendices.

Starting the Spreadsheet

This spreadsheet runs under Lotus 1-2-3, release 3 only. Computer hardware required includes an IBM PC-compatible microcomputer with at least an 80286 processor, 1 MB of random access memory and a hard drive. Details for running Lotus are contained in the 1-2-3 manuals. To run the spreadsheet you will need to copy the .WK3 file to the (sub)directory from which you plan to do analyses.

The spreadsheet should be renamed to a project-specific name and can be accessed from within Lotus with the /File Retrieve menu command. The program is written as a Lotus 1-2-3 macro, so the menu tree that appears after retrieving the spreadsheet is specific to the spreadsheet program. This menu provides for data entry, computing of survey costs and errors, and graphing the results. Users can save the spreadsheet and quit 1-2-3 from within this menu.

The spreadsheet macro terminates when ESC is pressed, either by accident or intentionally. When ESC is pressed the default Lotus 1-2-3 menu tree appears and changes can be made to the spreadsheet program if needed. To re-start the spreadsheet from the Lotus menu, press <ALT-M>. In non-macro Lotus 1-2-3 use, the

ESC key is used to "back out" of a menu structure, but ESC inescapably terminates a macro. To "back out" of the menu structure in this spreadsheet the user should select the "Return" option from the submenu.

We very strongly recommend that the original spreadsheet never be used for estimating survey costs and errors. Copy the spreadsheet from the original and work with copies only. It may be easiest to use a different copy of the spreadsheet for each different survey project. Spreadsheet copies should be renamed to clearly identify the project to which they apply.

Survey Spreadsheet Basics

An efficient user of this spreadsheet will need to think of the survey process and the spreadsheet simultaneously in two different ways. The first way is through the spreadsheet menu structure, and the second is to think of the separate components of the survey process. This double-thought process helps to understand the entire survey administration process.

Estimation of survey error (random sampling error) is almost independent of the survey cost and administration parameters that are entered through the spreadsheet menu. Certain survey parameters affect sampling error, including the number of surveys to be administered, the type of survey item being used, and the sampling plan selected for the survey. These parameters are also entered through the spreadsheet menu, but they are processed to compute standard errors rather than survey costs.

The next three sections of this manual present an overview of the menu tree, the cost components of the survey process, and the way that sampling error is computed. Detailed discussions of survey use are presented in the appendixes. It is expected that an experienced spreadsheet user will use the appendices rather than the text of this report because of the greater level of detail presented there.

The Spreadsheet Menu Tree

The main menu contains eight options. The first five are dedicated to user input of survey specifications, time and cost estimates, and other items affecting the size and scope of the survey, or the cost of conducting a survey. The sixth and seventh menu options process the data, either to create graphs or to save the spreadsheet and/or graphics. The final menu item serves to exit the spreadsheet into Lotus, or to exit Lotus entirely. The menu tree is reproduced in its entirety in Appendix A.

The first five menu options relate to entry of survey-related data into spreadsheet fields. The names of those fields into which data are entered directly are presented in Appendix B. Since some data can be entered by more than one method, Appendix

C discusses the different types of data that can be entered from each branch of the main menu. A discussion of the eight branches of the main menu follows.

Mode. The bulk of the required survey cost and time variables are entered through the "Mode" menu heading. These cost and time variables will tend to be specific to a particular survey project, as contrasted with environmental parameters (wage scales, acceptable per diem expenses, postage costs, etc.) that will remain more constant across different projects.

Two data entry modes are available, "Systematic" and "Individual". Under the Systematic mode, all survey time and cost estimates are entered. It is permissible to re-enter existing values, but it is required that a value be entered for every field under this data entry mode. This data entry mode will be preferred when there is a need to examine every variable relating to the survey process. A new user of the spreadsheet may prefer this mode, or an experienced user who is first starting to evaluate costs in a new project and needs to examine all fields.

The Individual data entry mode allows users to change values for single fields but requires that the user identify the field by name. (Field names are listed in Appendix B.) This data entry mode will be preferred when a new survey project is similar in structure to an earlier one, and only a few fields need to be changed. The Individual data entry mode might also be preferred when changes are made in environmental parameters since they can also be changed via the Individual data entry mode. These parameters would normally be changed through the Parameter menu; they cannot be changed through the Systematic data entry mode.

Parameter. Survey "Parameters" are those quantities that underlie all survey projects. Some are specific to a particular survey (number and type of items) while others are general (wages, travel costs, postage, supplies). These two data types are entered under the "Survey" and "Costs_and_Labor" submenus, respectively.

Admin. This menu branch provides for the specification of the method of survey administration: to large groups, through the mail, by telephone, or by microcomputer. If surveys are to be administered by mail or by telephone, then submenus guide the user to select appropriate options such as the use of a business reply envelope or a self-addressed, stamped envelope for returning mailed surveys.

Recruit. This branch of the menu is useful if it is desired to apply the spreadsheet to Army recruits or prospective recruits. If the survey is to be of recruits or prospects then the user is guided to select the survey point (such as at the time of signing the enlistment contract), and to choose a meaningful survey sampling plan and administration method. Since

the sampling plan can be changed by using the other menu branches, the user needs to be careful to not select combinations that are impossible for the recruiting process.

Sampling. The survey sampling plan is specified through the Sampling branch of the main menu. Simple random sampling, stratified sampling and cluster sampling are available as options. Stratified sampling assumes sampling proportional to stratum size and cluster sampling assumes all clusters are the same size. Both methods make additional assumptions about the standard deviations of items (see Appendix E for details).

Note that parameters specific to the different sampling plans are NOT entered under this branch of the spreadsheet menu, but are entered under the Mode menu branch. These sampling parameters include item standard deviations, the reduction in those standard deviations with a stratified sampling plan, and the standard deviation of item means across clusters.

Graph. The Graph submenu sets up specifications for graphing survey data, creates those graphs, and allows for "iteration" to plot multiple graphs on a single set of axes. After selecting x-axis and y-axis variables (survey cost, sampling error, method of survey administration, etc.), the user can display the graph. After it is displayed, it can be printed. If an attempt is made to print a graph before it has been displayed, then the previous graph (if any) is printed.

The Iterate option provides a useful capability: up to six series of data can be plotted in one graph. If ITERATE is set to "no" then any existing graph data is deleted and a single data series is plotted. When ITERATE is set to "yes", then existing graph data is retained and new data is created as well.

File. The word "File" refers to DOS files; this menu option allows the user to save this spreadsheet as a .WK3 file, and it also allows the current graph to be saved as either a .CGM file or a .PIC file.

Note that .WK3 files are saved ONLY as Lotus "backup" files and that the name of the worksheet that is initially loaded into Lotus 1-2-3 will be retained when backing up the file. Care should be taken not to load the original copy of this worksheet (named SURVEY.WK3) into Lotus because it may then be destroyed by the backup operation. Instead, the user should rename the worksheet to the desired final name before starting Lotus 1-2-3.

.CGM and .PIC files are commonly used to transport graphic images between microcomputer applications. WordPerfect, for instance, supports both .CGM and .PIC formats when importing graphics. See the user manuals of other applications for more details.

Quit. This final menu allows the user to "Exit" from the spreadsheet (but remain in 1-2-3) or to "Quit" 1-2-3 entirely. A third option allows the user to return to the main menu without selecting either the Exit or the Quit option.

The Structure of the Cost-Estimation Program

A survey can be broken down into five separate cost components:

Project management: Manage the project; solicit bids if necessary; analyze the data; write reports, etc. Consider separate overhead rates if desired.
Survey creation: Determine survey content; create survey items; pilot test the survey, possibly more than once.
Survey publication: Transfer the survey onto some physical medium through which the survey can be administered.
Survey administration: Transport the survey to administrators; administer the survey; transport the completed forms to the project manager.
Data capturing: Ship the data from paper forms (if any) to a data capturing site and transfer it to magnetic tape; ship the completed tape to the project manager.

The spreadsheet treats these five categories separately although the method of administration, the method of publication and the cost of capturing the data are interrelated. Details of the formulas estimating survey costs are presented in Appendix D.

The rationale behind the creation of these five categories is that the same steps must be taken to manage every survey project and that the same process must be followed to create and test a survey. After a survey is completed, it must be transferred to some physical medium, such as scannable booklets, paper-and-pencil forms, or microcomputer diskette. Certain methods of survey administration require certain physical survey formats. A mail survey, for instance, cannot be administered by microcomputer. Nor can a group-administered survey be completed on microcomputers, given typical financial constraints.

Finally, after the survey is completed, the data must be put in a form that can be analyzed by the survey management team. This data capturing process may be very low cost, such as when telephone survey data are entered directly into computers, or much more expensive, when handwritten data need to be typed and/or key entered. When a survey project is broken down into these five distinct blocks then cost estimation becomes a simple sum of five pieces. The interrelations between the final three pieces can also be programmed without too much difficulty.

Estimation of Survey Error

In this spreadsheet, "survey error" or "sampling error" relates to the "standard error of the mean" for a given survey

item. The error term computed is the same as the "plus or minus" percentage often reported for national polls, the 95% confidence interval for a mean value or percentage. Different formulas are used to compute the sampling error for different types of items, and the error decreases as sample sizes increases.

It is possible to estimate sampling error for five item types using this spreadsheet: 4-point, 5-point and 7-point Likert items, demographic items, and yes-no items. These item types correspond to items used in the U.S. Army New Recruit Survey and are common in other surveys as well. The three types of Likert-scaled items are kept separate here because, in application, they usually have different observed standard deviations (7-point scales have greater standard deviations).

Details of the calculation of survey error are presented in Appendix E. Some simplifying assumptions were made so that the usual, quite complex formulas would be useable. Those assumptions are also discussed in Appendix E.

Details of the Survey Spreadsheet

This section of the User's Manual outlines tasks that are included in each survey cost category. This section should provide a good understanding of the components of the survey process as modelled by the survey spreadsheet. Actual algebraic formulas used to estimate costs are presented in Appendix D, and the names of the fields used in those calculations are given in Appendix B.

The estimation of survey sampling error is not discussed in this section. Calculational details are presented in Appendix E.

The following activities are considered part of the survey management process:

Select and implement the survey sampling plan.
Solicit bids for all or part of the survey project.
Award contract(s) for the project.
Analyze survey data
Prepare and present final report
Allow overhead costs to be computed as a percentage of total costs for any or all of the five general cost categories.
Time using this spreadsheet is a survey management expense.

Survey Creation includes these tasks and cost considerations:

Determine the content area and number of survey items.
Create survey items.
The cost of survey creation depends only number of items, not the type of item or the survey content area.
Costs include:
Instrument design time.

Pilot testing and instrument revision.
Determine sampling methodology.

More than one pilot test might be conducted.

Survey Publication requires that a choice of survey medium be made, which implies some limitation on the method of survey administration. A survey may be published as an optically-scannable booklet, as a paper-and-pencil survey form, in online telephone survey software, or on diskette for microcomputer administration of the survey. Tasks accomplished and accompanying cost considerations are:

- Scannable booklet.
  - N of items determines number of booklet pages.
  - Cost of publication depends only upon number of pages and number of surveys to print.
- Paper-and-pencil survey booklet.
  - N of items determines number of booklet pages.
  - Cost of publication depends only upon number of pages and number of surveys to print.
- Telephone survey software.
  - Includes the cost of programming the survey into data-capturing software.
  - Also includes cost of interviewers' diskettes
  - Telephone surveyers could use scannable or paper-and-pencil formats, in which case the costs of those media would apply.
- Computerized survey for administration by microcomputer.
  - Time to program the survey into the survey administration software, a function only of the number of survey items.
  - Cost of diskettes to send to each site each month.
  - Time needed to copy survey program to diskette.
  - Time and materials to write brief instruction booklet.

Survey Administration includes sending the survey to the administrators, administering the survey, and shipping it back to the survey project manager. Surveys may be administered to large groups, by mail, as telephone interviews, or by microcomputer. Relevant considerations are:

- Group administration of the survey. This method has been used in the past to administer the Army New Recruit Survey (NRS).
  - Only the use of a scannable booklet makes sense.
  - Costs include (for each administration site):
    - Bulk ship booklets to site.
    - Overnight ship booklets to make up shortages.
    - Training of administrators: Trainer time and administrator time, but no travel to or from training sessions. [Not for each site].
    - Travel to and from administration site for each survey administrator.
    - Time (in days) to administer surveys.

Per diem expenses for each administrator.
Bulk ship completed surveys to project manager. (They could be shipped directly to the data capturing site.)
Bulk ship unused surveys to project manager or to next survey site.

Mail survey. Using a mail survey implies personalized interaction with respondents (e.g. first class mail).

The survey could be scannable or paper/pencil (requires a booklet format)

Costs include

Time to write letters and compose post cards.
Cost of creating/purchasing a mailing list.
Clerical time to address envelopes.
Clerical time to stuff envelopes.
Letterhead paper and envelopes.
Printing of cards and letters.
First-class postage for surveys, cards, etc.
Return postage (SASE or BRE).

Costs do not include annual fees for bulk mailing permits, license for BRE use, post office box fees, etc.

This spreadsheet will initially set up costs for a mail survey project including

An introductory letter to 100% of the sample.
Survey packet (cover letter, survey booklet, incentive, and return SASE or BRE) (100%).
Follow-up post card to nonrespondents (80% of sample).
Second survey packet to nonrespondents (60%).
follow-up letter to nonrespondents (50%).
Final response rate of 60% (needed to estimate cost of BRE).

Telephone survey. Telephone surveys might be reasonable, for instance, to follow up Qualified/Not Enlisted recruits.

Telephone interviewers could use scannable booklets, paper/pencil booklets, or an on-line data capture method. (Must be booklets, not separate answer sheets, for simplicity.)

Costs include

Time to train interviewers:
Trainer time and interviewer time.
Travel of trainer to and from site.
Cost of creating/purchasing list of telephone numbers.
WATS or long distance telephone charges.
Interviewer time while surveying.
Interviewer time depends only upon number of open-ended items, number of closed-format items, and difficulty in contacting subjects.
If scannable or paper/pencil booklets: bulk shipment to and from the survey site.

If online data capture: Technician travel to and from site to install the survey; per diem and pay while on the trip; expense to send downloaded data to survey project manager.

Computerized survey: Appropriate (for instance) when administering surveys at Army Recruiting Stations.

Survey program copied from diskette to hard drive and administered from hard drive. Responses are later downloaded to diskette for data capture.

Costs include

Recruiter time to tell respondent about survey

Overnight shipping of diskettes to and from each station once a month.

Time to teach recruiters about the survey: trainer time and recruiter time

Travel, pay and per diem for recruiters to get to and from training site.

Costs do not include

Cost of computers for administering the survey

Time of the survey respondent.

Capturing Data involves shipping the survey media to the data capture site, transferring data to magnetic tape or diskette, and shipping to data analysis site. Data capture costs are different for the different methods of survey publication. Relevant considerations and costs are:

Scannable survey booklet. *Costs include:*

Bulk shipment of surveys to site.

Setup cost for scanning program.

Per-booklet cost for scanning.

Per-item cost for coding open-ended items.

Per-item cost for transcribing open-ended items.

Cost of magnetic tape or diskettes.

Expense of writing data file to tape/diskette.

Ship tape/diskette to data analysis site.

Possible bulk ship surveys to project manager.

Paper-and-pencil survey booklet.

Bulk shipment of surveys to site.

Setup cost for data entry program.

Per-item cost for data entry.

Per-item cost for coding open-ended items.

Per-item cost for transcribing open-ended items.

Cost of magnetic tape or diskettes.

Expense of writing data file to tape/diskette.

Ship tape/diskette to data analysis site.

Possible bulk ship surveys to project manager.

Telephone survey software.

Cost of magnetic tape.

Expense of writing data file to tape/diskette, possibly including merging data from several work stations.

Ship tape/diskette to data analysis site.

Computerized survey for administration by microcomputer.

Shipping diskettes to data capture facility.
Cost of merging diskette data into total data base, probably on an ongoing basis
Cost of magnetic tape.
Expense of writing data file to tape/diskette.
Ship tape/diskette to data analysis site.

Other Considerations

Certain administrative costs such as receptionist and secretarial overhead are not included in the spreadsheet; costs estimated in the spreadsheet are for direct project-related expenses only. Overhead costs are included in the spreadsheet in the overhead multipliers for project management, survey creation, survey publication, survey administration, and data capturing. It has also been assumed that the contractor already has software needed for telephone administration of surveys and for microcomputer administration of surveys and any other necessary "tools of the trade". If the equipment and personnel needed for a survey project are not available, then the costs of acquiring equipment and training personnel must also be considered in the cost of a survey.

It may not be clear whether certain costs are included in the overall estimates computed by the spreadsheet. If there is uncertainty, this rule should answer the question: if no cost (or time) estimate has been specifically entered into the spreadsheet to cover that item, then the item has not been considered as part of the survey costs.

Survey Spreadsheet Tips and Traps

This section of the User's Manual presents a few tips for spreadsheet use, and also warn of traps to avoid. The tips and traps are not entered in any particular order. Tips are presented here because they have helped in the past, and traps because they have caused problems. Hopefully, this section will make spreadsheet use easier for new users.

Systematic data entry mode TRAP: When using the Systematic data entry mode, EVERY field must be entered before exiting. If only a few fields need to be changed it will be easier to use the Individual data entry mode.

Parameter/Costs_and_Labor data entry TRAP: Entering data under this menu branch also requires that all fields in a category be entered. The problem is less extreme than in the case of the Systematic data entry mode, but it still exists. In some cases it will be easier to use the Individual data entry mode than the Parameter/Costs_and_Labor menu.

Printer Installation TIP: When copying the spreadsheet program to your computer, be sure that your printer is selected as the default printer. A printer mismatch can cause

unpredictable (but sometimes interesting) results when printing graphs.

Project Management TIP: If survey project management is to be subcontracted, then all time estimates for project management can be set to zero hours and the cost of the subcontracting entered an other expenses in MGMT_OTHER. This amount will be multiplied by the survey management overhead rate, OHD_MANAGEMENT, when computing total survey project costs.

Survey Creation TIP: If the process of survey creation is to be subcontracted then all times needed for survey creation should be set to zero and the total cost entered under CREATE_OTHER. This amount will later be multiplied by the overhead rate for survey creation, OHD_CREATION, when computing total survey project costs.

Overhead Expenses TRAP: Overhead multipliers are used for each of the five survey cost categories. If time and cost estimates for the survey include overhead, then the overhead multiplier should be set to 1.0, rather than the higher number that is used when overhead is computed as a percentage of other costs.

Survey booklet publication TIP: If the cost of creating a scannable survey booklet is to be subcontracted, then all time estimates should be set to zero and the total booklet cost entered as SCAN_BK_OTHER. This amount will later be multiplied by the overhead rate, OHD_PUBLISH, when computing total project costs.

Exact Data TIP: The spreadsheet is designed to provide graphics (only) to the user. If there is a need for the exact dollar amounts which underlie the graphs, they can be retrieved also. After creating the graph, press ESC from the spreadsheet menu and then move to Sheet E using Lotus 1-2-3 commands. All graphing data are recorded on this sheet, and they can be copied by hand when needed. Data can also be printed as a range using normal Lotus 1-2-3 commands. The user will need to check to be sure that the correct data range is being copied, of course! After copying the data, re-start the macro by pressing <ALT-M>.

Graph type TIP: Only five different graphs are programmed into this spreadsheet, but some other variable combinations can be created when needed. For instance, survey sampling error can normally be plotted only against the number of surveys completed. If there is a need to compare sampling error for the different survey methods, the user can iterate the Error-vs-N graph for each of the four sampling methods. The data comparing sampling error for the survey methods is contained on that graph (even though the x-axis is N_Surveys, not survey administration method).

Paper-and-Pencil booklet publication TIP: If the cost of publishing a paper-and-pencil survey booklet is to be entirely subcontracted, then the time estimates (KEYP_TYPE_HRS and KEYP_PRINT) should be set to zero and the total booklet cost entered under BIND_BOOKLET. This amount will then be multiplied by the overhead rate, OHD_PUBLISH, when computing total project costs.

Administration method and publication media TRAP: There is no fixed constraint on the combination of survey administration methods and media for survey publication. As a result, it is possible to estimate costs for surveys that cannot happen. The user needs to check administration method/medium combinations for reasonableness.

Number of survey items TRAP: In practice, far more items can be asked in a written or computerized survey than in a telephone survey. One cannot really compare telephone surveys to other forms of surveys because of this constraint. The spreadsheet user needs to be aware that, in practice, the number of items in a survey may change as well as the administration method and/or medium.

Survey of (prospective) recruits TRAP: No rigid constraints are placed on the combinations of survey administration method and publication media in this spreadsheet. Although the Recruit menu branch leads to selecting meaningful combinations for the recruiting process, those selections can be changed later on during spreadsheet use.

Identification of graphs TRAP: The content of graphs produced by the spreadsheet is identified fairly clearly. The user can add a subtitle line to each plot if desired, and each data series can be labelled by the user. However, it is quite easy to make several changes in survey parameters while iterating a series of plots and to lose track of what those changes were. A user can avoid this difficulty by sketching the plot desired in advance and noting all labels that will need to be entered. When making complex comparisons, other labels may need to be added after the graph is printed.

ESCape key TIP and TRAP: In normal use of Lotus 1-2-3, the ESC key allows the user to "back out" of lower menu tree levels into higher levels. As a result, experienced 1-2-3 users will use ESC often. Unfortunately, ESC terminates a macro and will cause the spreadsheet program to stop. If that happens, use <ALT-M> to re-start the macro at the main menu.

Spreadsheet modification TIP: An experienced user can exit from the spreadsheet by pressing ESC and modify the spreadsheet. There is no reason not to do this, particularly if changes in survey administration method are warranted. Great care must be taken, of course, to be sure that changed made are those desired, and those changes should never be made to the original

spreadsheet copy. It may be possible to effectively modify spreadsheet results without changing spreadsheet formulas through judicious entry of zero in certain fields.

Introduction to the Appendixes

The first four appendixes serve as references for the regular spreadsheet user. The fifth provides technical notes on the calculation of survey sampling error. The sixth contains the range names and cell formulas necessary to develop a working spreadsheet. This introduction to the appendices gives a brief note on the contents of each appendix.

APPENDIX A: Spreadsheet Menu

The full menu tree is reproduced here, providing a "road map" for the operation of the spreadsheet.

APPENDIX B: Spreadsheet Data Entry Fields

This list of data entry fields and their contents will be essential for any spreadsheet user who needs to use the "individual" data entry mode.

APPENDIX C: Data Entry Fields Accessible from Each Branch of the Menu Tree

Different types of survey project data are entered from different branches of the spreadsheet menu; some types of data can be entered in more than one way. This appendix summarizes the data types that can be entered from each branch of the menu.

APPENDIX D: Survey Cost Formulas Used in the Spreadsheet

This list of algebraic formulas will be required reading for anyone who needs to know in detail exactly how survey costs are computed.

APPENDIX E: Statistical Formulas Used to Calculate Random Sampling Error

Standard statistical formulas are used to estimate the sampling error for each of the three types of survey sampling. Certain assumptions and approximations are made in the application of those formulas, however. This appendix explains the relevant formulas and all assumptions and approximations made.

APPENDIX F: Spreadsheet Range Names and Cell Formulas

This listing of named ranges and cell formulas may be used to build a working spreadsheet.

APPENDIX A
Spreadsheet Menu

Mode	Automatic or user-controlled time, cost estimates
Systematic	Automatic entry of ALL time and cost estimates
Individual	User-controlled entry of time and cost estimates
Return	Return to main menu
Parameter	Sets survey size and underlying cost parameters
Survey	Sets the survey size and scope
N_Survey	Number of surveys to be completed
Fixed_Fmt	N fixed-format items (yes/no, etc.)
Mult_R	N of multiple-response categories
Open_Items	Number of open-ended items
Typed_Op	N of open-ended to type verbatim
Coded_Op	N of open-ended items to be coded
Item_Rel	N open-ended coded for reliab. chk.
Return	Return to Parameter menu
Costs_and_Labor	Costs related to the surveying process
Wages	Salary and wage scales
Travel	Travel and per-diem expenses
Postage	Postage and shipping costs
Supplies	Office and computer supplies
Other	Other survey costs
Return	Return to Parameter menu
Return	Return to main menu
Admin	Select method of survey administration
Group	Administration to large groups
Mail	Administer the survey by mail
Scannable	Scannable survey booklet
Paper-and-Pencil	Paper-and-pencil survey booklet
BRE_or_SASE	Use SASE or BRE for return postage
SASE	Use SASE
BRE	Use BRE
Return	Return to Mail menu
Return	Return to Admin menu
Telephone	Administer the survey by telephone
Online	Online data capture
Paper-and-Pencil	Paper-and-pencil survey booklet
Scannable Forms	Optically scannable survey booklet

```
    Return      Return to Admin menu

  Computer      Administer the survey by microcomputer

  Return        Return to main menu

Recruit         Are Army recruits/prospects being surveyed?

  Yes           Survey of Army recruits or prospects

    Init.Appt.  Survey at initial appointment
    Application       Survey at time of application
    Contract    Survey when contract is signed
    Pt.of_Accession   Survey at point of accession
    Return      Return to main menu
  [ If surveying at time of Initial Appointment, Application  ]
  [ or Contracting is selected, the user is asked to choose a ]
  [ sampling plan and then a method of survey administration. ]
  [ Submenus for mail and telephone surveys appear if needed. ]

  No            Survey not restricted to recruiting process
  Return        Return to main menu

Sampling        Specify the survey sampling method

  Random        Simple random sampling
  Stratified    Stratified, sampling proportional to size
  Cluster       Random sample of clusters
  Return        Return to main menu

Graph           Create graphs based on survey parameters

  Y-Axis        Select dependent variable for the graph

    Cost        Survey cost
    Respondent_Cost   Cost per survey respondent
    Error       Survey sampling error

      4-Point   Error for 4-point Likert item
      5-Point   Error for 5-point Likert item
      7-Point   Error for 7-point Likert item
      Yes-No    Error for Yes-No item
      Demog     Error for Demographic item
      Return    Return to Y-Axis menu

    Return      Return to Graph menu

  X-Axis        Select independent variable for the graph

    N_Surveys   Number of surveys to be completed
    Admin_Method      Method of survey administration
    Return      Return to Graph menu
```

Iterate	Add another data series to current graph?
Yes	Yes, keep current data and add more
No	No, create an entirely new graph
Return	Return to Graph menu
Graph	Display the current graph
Print	Print the current graph
Return	Return to main menu
File	Save the worksheet and/or graphs
Backup_WKS	Backup this worksheet
Save_Graph	Save current graph to a .CGM or .PIC file
CGM	Save graph to a .CGM file
PIC	Save graph to a .PIC file
Return	Return to file menu
Return	Return to main menu
Quit	End this session
Exit	Clear this spreadsheet and continue 1-2-3
Quit	Quit 1-2-3 without saving this spreadsheet
Return	Do not end this session (return to main menu)

APPENDIX B
Spreadsheet Data Entry Fields

This appendix itemizes the fields which the user can modify using the "individual" data entry mode. These fields include all survey specifications, including those relating to survey size and scope and cost and labor estimates (which can also be entered under the Parameter menu heading). Survey item standard deviations are also enterable with this menu option. Time and cost estimates for survey tasks comprise most of these fields.

Number of surveys to be administered (or mailed out):

N_SURVEYS	N of completed surveys
N of survey items:	Total N of items: N_Fixed+N_MultR+N_Open
N_FIXED	N fixed-format (multiple choice, yes/no,
N_MULTR	N of multiple-response categories
N_OPEN	Total N of open-ended items
N_OPEN_TYPED	N of open-ended to be typed verbatim
N_OPEN_CODED	N of open-ended items to be coded
N_REL_ITEMS	N of open-ended items to be coded twice

Hours and costs related to survey project management:

SAMPL_DECISION	Professional hours to select sampling plan
SAMPL_PRACTICAL	Professional hrs to implement sampling plan
WRITE_RFP	Professional hours to write proposal
TYPE_RFP	Secretary hours to type/copy proposal
PUBLISH_RFP	Secretary hours to publish the proposal
MISC_RFP	Hours to answer bidder questions, etc.
PROCESS_BIDS	Secretary hours to handle bids
EVALUATE_BIDS	Professional hours to evaluate bids
DELIV_SECTY	Sec'ty hrs to receive/process deliverables
DELIV_PROF	Professional hours to receive/process deliverables
INFO_SECTY	Secretary hours to publish/disseminate project information
INFO_PROF	Professional hours to publish/disseminate project information
DATA_ANAL_HRS	Programmer hours for survey data analysis
FINAL_SECTY	Secretary hours to type final report
FINAL_PROF	Professional hours to write final report
MGMT_OTHER	Other expenses relating to project mgmt.

Hours needed for survey creation:

CONTENT_TIME	Prof. hours to determine survey content
ITEM_TIME	Professional hours to write survey items
SECTY_DESIGN	Secretary hours to create survey drafts
ASST_PILOT	Research Assistant hours to administer and analyze pilot survey
SECTY_PILOT	Secretary hours for pilot test of survey
PROF_PILOT	Professional hours for pilot test of survey
SECTY_REVISE	Secretary hrs to revise survey after pilot

PROF_REVISE	Prof. Hours to revise survey after pilot
CREATE_OTHER	Other expenses relating to survey creation

Scannable booklet publication costs:

MOCKUP_COST	Cost of booklet mockup
COLOR_COST	Cost of adding color to booklet
LITHO_COST	Cost to add litho codes to scan booklet
TYPE_COST	Cost of typesetting scannable booklet
PRINT_COST	Per-booklet cost of printing
SCAN_BK_OTHER	Other costs for printing scannable booklet

Scannable booklet data capture costs:

SCAN_PROGRAM	Cost to program the scanner for the survey
BOOKLET_SCAN	Cost of scanning one survey booklet

Paper-and-Pencil survey publication costs:

KEYP_TYPE_HRS	Hrs.for sec'ty to type 1 page of survey
KEYP_PRINT	Cost to print 1 page of survey booklet
BIND_BOOKLET	Cost of stapling/binding survey booklet

Paper-and-Pencil survey data capture costs:

KEYP_PROGRAM	Cost of creating data entry program
ITEM_KEY_COST	Per-item cost for data entry

Group Survey Administration: Parameters and Costs

HOURS_TO_TRAIN	N of hours to train administrators
ADMIN_DAYS	N of days at each site to administer survey
N_ADMINS	N of sites at which survey will be administered (or total N times administered)
DAILY_ADM_RATE	Daily pay rate for each survey administrator
N_ADMINISTR	N administrators at each group admin site

Computer-Administered Survey Publication:

PC_ITMS_PER_HR	Items per hour for programming PC data capture software
INSTR_BOOK_HRS	Hours to write brief instruction manual
INSTR_BK_MISC	Misc. per-copy costs to print instr. manual

Computer Survey Administration: Parameters and Costs

EXPL_HRS	Hours to explain survey to each respondent
N_MONTHS	N of months during which survey will be administered
N_STATIONS	N of stations at which survey will be administered
HRS_TRAIN_RECR	Hours needed to train all administrators

N_RECRUITER	N recruiters to be administering the survey
DISK_COPY_HRS	Programmer time to copy survey program to each diskette

Computer-administered survey: Data capture costs:

DISK_DATA_MERGE	Cost to manage diskettes for computer-administered survey

Mail Survey Administration: Parameters and Costs

COVER_LTR_HRS	Hours to write the cover letter(s)
WRITE_CARD_HRS	Hours to write the follow-up card(s)
MAIL_LIST	Cost to purchase/create mailing list
ENV_PER_HR	N of envelopes addressed per hour
STUFFED_PER_HR	N of envelopes stuffed per hour
RESP_RATE_1	Resp.Rate before sending follow-up card
RESP_RATE_2	Resp.Rate before sending 2nd survey packet
RESP_RATE_3	Resp.Rate before final follow-up letter
MAIL_RESP_RATE	Overall mail survey response rate

Telephone survey publication: Parameters and costs:

N_INTERV	N interviewers to be involved in survey
TEL_ITEM_PER_HR	Items per hour that can be programmed into telephone survey software

Telephone survey administration: *Parameters and costs*

HOURLY_LONG_D	Long distance/WATS rate for 1 hour
HRS_TRAIN_TELE	Hours needed to train an interviewer
HRS_PER_SURVEY	Hours (including dialing, etc.) to complete one survey
PHONE_LIST	Cost to purchase/create telephone list

Online telephone survey: Data capture costs

TELE_DATA_MERGE	Cost of managing online tele. survey data

Miscellaneous data capture costs:

WRITE_TAPE	Cost to write data to magnetic tape
ITEM_CODE	Cost to code 1 open-ended item on 1 survey
TYPE_OPEN_ENDED	Cost to transcribe 1 oper ended on 1 survey
CODE_BOOK_ITEM	Cost to create code book for 1 item

Hourly Salaries and Pay Rates:

PROGRAMMER_RATE	Hourly rate for computer programmer
PROF_RATE	Hourly rate for professional consultant
SECTY_RATE	Hourly rate for secretaries
ASST_RATE	Hourly rate for Research Assistants
RECR_RATE	Hourly rate for Army Recruiters (administrators of microcomputer survey)

TELEMKT_RATE	Hourly rate for telemarketers
CLERICAL_RATE	Hourly rate for clerical workers

Travel Expenses:

PER_DIEM	Allowable per diem expense
SITE_TRAVEL	Cost of R.T. travel to survey admin. site
CAR_RENTAL	Daily car rental rate (incl. all auto expenses)
TELE_TRAVEL	Round trip travel costs for trainer of telephone interviewers

Postage and shipping:

FIRST_CLASS	Cost of first-class letter postage
POST_CARD	Cost of postage for post card
FED_EX	Cost of overnight priority letter
BULK_FED_EX	Cost of overnight shipping a package
SURVEY_POSTAGE	Postage cost to mail survey packet
SASE	Postage cost for survey SASE
BRE	Postage cost for survey BRE
SHIP_TO_SITE	Cost to bulk ship surveys to admin site
SHIP_FROM_SITE	Cost to bulk ship unused surveys to project manager
RETURN_SURVEYS	Cost to return completed surveys

Stationery:

ENV_#10	Cost of #10 envelope
LETTERHEAD	Cost of 1 page letterhead stationery
ENV_9x12	Cost of 9"x12" envelope
PRINT_CARD	Cost of printing one post card
PAGE_PRINT_COST	Cost of printing a letter
DISK_MAILER	Cost of diskette mailer

Costs of Other Supplies:

COST_DISKETTE	Cost of microcomputer diskette
INCENTIVE	Cost of incentive for mail survey respondents
MAG_TAPE	Cost of computer magnetic tape

Any other survey costs not yet itemized:

ALL_OTHER_COSTS	All other survey costs

Survey sampling methodology:

N_STRATA	N of strata in stratified sampling design
STRATUM_SD_DECR	Decrease in within-stratum SD compared to Simple Random Sampling
N_CLUS_TOT	Total number of clusters
N_CLUS_SAMP	N of clusters sampled
N_PER_CLUS	N per cluster = N_SURVEYS/N_CLUS_SAMP

SD_CLUS_5	SD of cluster means (5-point Likert item)

Data on survey items:

SD_LIKERT-7	Typical SD for 7-point Likert item
SD_LIKERT-5	Typical SD for 5-point Likert item
SD_LIKERT-4	Typical SD for 4-point Likert item
PROPN_YES-NO	Proportion selecting "yes" or "no"
PROPN_DEMOG	Proportion selecting the demographic category

Multipliers for overhead rates:

OHD_MANAGEMENT	Overhead multiplier for project management
OHD_CREATION	Multiplier for survey creation phase
OHD_PUBLISH	Multiplier for survey publication phase
OHD_ADMINISTER	Multiplier for survey administration phase
OHD_DATA	Multiplier for data capturing phase

APPENDIX C
Data Entry Fields Accessible from Each Branch of the Menu Tree

Eight options exist in the main menu tree. The first five request data from the spreadsheet user, the next two process that data (creating graphs or saving files), and the final option exits from the spreadsheet. Data that can be entered under the first five menu options is described here. The two options that process the data also require some data input (x-Axis and y-Axis variables; names of files to be saved), but that information should be self-explanatory and need not be discussed here.

Mode/Systematic

Automatically enter ALL time and cost estimates for a survey project. "Time and cost" estimates are those to perform specific tasks, such as writing a cover letter, printing survey booklets, and analyzing data. Once this process is started, it must be completed.

Mode/Individual

The individual data entry mode allows entry of the time and cost estimates that are entered for the Mode/Individual selection. In addition, a user can enter most of the other survey parameters such as hourly pay rates and the number of survey items. The names of the Lotus 1-2-3 fields must be used to enter survey data with this menu selection.

Parameter/Survey

Survey parameters set the size and scope of the survey. How many survey items will be written, and of what type? Changing these parameters can have a large influence on the cost of a survey project.

Parameter/Costs_and_Labor

Basic overhead costs are entered under this menu selection. Those costs include hourly pay rates, travel-related expenses, the cost of office supplies, and other costs. These cost estimates can be expected to remain constant, or nearly constant, across a variety of survey projects.

Admin

The method of administering a survey is selected under this menu selection. If a mail-administered survey is selected, then the user can choose between a business reply envelope (BRE) or a self-addressed, stamped envelope (SASE) for returning the surveys. For mail surveys, the user also chooses between an optically-scannable survey booklet and a paper-and-pencil

booklet. If the survey is to be administered as a telephone interview, then the user chooses between online data capture, scannable booklets, and paper-and-pencil booklets.

Recruit

This menu selection is used when the survey is to be limited to a point in the Army recruiting process. The user can opt to survey potential recruits during their initial appointment, at the time of application or when they sign a contract. New recruits can be surveyed at the point of accession. After selecting a survey administration point, the user is guided through menus that select appropriate sampling plans and survey administration methods.

The method of survey administration and the sampling plan can be changed separately. If a survey project is restricted to the Army recruiting process, then the user must take care not to change the method of administration or sampling plan to some impossible combination. If the survey is not restricted to the Army recruiting process, of course, then no limitations on the sampling plan or administration method need exist.

Sampling

The method of survey sampling is specified under this menu branch: simple random sampling (SRS), stratified sampling, or cluster sampling.

APPENDIX D
Survey Cost Formulas Used in the Spreadsheet

This appendix describes the formulas used to calculate survey costs in the spreadsheet. The formulas were copied from the Lotus 1-2-3 spreadsheet and edited for readability. Comments have been added to clarify the cost components and the assumptions made in the survey model.

The first section of this appendix gives the formulas used to compute total survey cost from estimated subtotals. Subsequent sections describe the computation of those subtotals.

==========

Total Survey Costs:

==========

There are five separate cost components in a survey:

1. Survey management (manage the entire project),
2. Survey creation (create and pilot test survey items),
3. Survey publication (print/duplicate/reproduce the survey),
4. Survey administration (gather data), and
5. Data capturing (put the data in a useable form).

The first two components involve the same costs in every survey setting while the other three vary depending upon method of survey administration and medium through which the survey is published. Total survey cost is the sum of five component subtotals since any of the components could be subcontracted. Overhead multipliers are included in the five subtotals.

In this spreadsheet, total survey cost is always computed for all methods of survey administration. The cost of the project is taken as the cost of the user-selected method of survey administration. Formulas presented below give the Lotus 1-2-3 range names used in computing costs for surveys administered to groups, through the mail, by telephone, or on a microcomputer.

For group-administered surveys:

```
GROUP_TOTAL              (sum of five items below)
  MGMT_COST +
  CREA_COST +
  SCAN_BOOK_COST +
  GROUP_ADM_COST +
  SCAN_CAPTURE
```

For mail-administered surveys:

```
  MAIL_TOTAL              (sum of five items, which allow for either
    MGMT_COST +           optically scannable or handwritten
    CREA_COST +           survey booklets)
    @IF(SCANNABLE=1,SCAN_BOOK_COST,@IF(PAPER_PENCIL=1,
                                        KEYP_PUBL_COST,ERR)) +
    MAIL_ADM_COST +
    @IF(SCANNABLE=1,SCAN_CAPTURE,@IF(PAPER_PENCIL=1,
                                        KEYP_CAPTURE,ERR))
```

For telephone-administered surveys:

```
  TELE_TOTAL              (sum of five items, which allow for online
    MGMT_COST +           data capturing or scannable or paper-
    CREA_COST +           pencil booklets to record survey data)
    @IF(ONLINE=1,TELE_PUBL_COST,@IF(SCANNABLE=1,SCAN_BOOK_COST,
                        @IF(PAPER_PENCIL=1,KEYP_BOOK_COST,ERR))) +
    TELE_ADM_COST +
    @IF(ONLINE=1,MICRO_CAPTURE,@IF(SCANNABLE=1,SCAN_CAPTURE,
                        @IF(PAPER_PENCIL=1,KEYP_CAPTURE,ERR)))
```

For microcomputer-administered surveys:

```
  COMP_TOTAL              (sum of five items below)
    MGMT_COST +
    CREA_COST +
    COMP_PUBL_COST +
    COMP_ADM_COST +
    MICRO_CAPTURE
```

==========

Survey costs for project management (the first cost component):

==========

The cost of managing a survey is the sum of seven components, times the overhead rate. The seven components include determining and implementing a sampling plan, writing and publishing an RFP, awarding the survey contract, analyzing data, and writing a final report. Ongoing management costs and "other" costs are also included.

```
MGMT_COST          = (sum of 7 items below) * OHD_management
  SAMPL_COST       = (SAMPL_DECISION+SAMPL_PRACTICAL)*PROF_RATE
  RFP_COST         = WRITE_RFP*PROF_RATE+(TYPE_RFP+PUBLISH_RFP
                                          +MISC_RFP)*SECTY_RATE
  AWARD_COST       = EVALUATE_BIDS*PROF_RATE
                                          +PROCESS_BIDS*SECTY_RATE
  ONGOING_COST     = DELIVERABLES+INFO_PUBLISH
    DELIVERABLES   = DELIV_PROF*PROF_RATE+DELIV_SECTY*SECTY_RATE
    INFO_PUBLISH   = INFO_PROF*PROF_RATE+INFO_SECTY*SECTY_RATE
  DATA_ANALYSIS    = DATA_ANAL_HRS*PROGRAMMER_RATE
  FINAL_REPORT     = FINAL_PROF*PROF_RATE+FINAL_SECTY*SECTY_RATE
  MGMT_OTHER       = Other project management costs
```

Survey creation costs (the second of five cost components):

The cost of creating a survey depends only on the professional time to create items and the secretarial time to type them, coupled with time needed to conduct a pilot test and revise the items. It is assumed here that a research assistant actually conducts the pilot test while a consultant-level professional creates and modifies survey items. The cost of creating the survey is the sum of four components times the overhead rate for the survey creation phase.

```
CREA_COST       =  (sum of 4 items below)*OHD_CREATION
  DESIGN_COST   =  SECTY_DESIGN*SECTY_RATE
                          +(CONTENT_TIME+ITEM_TIME)*PROF_RATE
  PILOT_COST    =  ASST_PILOT*ASST_RATE+SECTY_PILOT*SECTY_RATE
                          +PROF_PILOT*PROF_RATE
  REVISE_OTHER  =  SECTY_REVISE*SECTY_RATE+PROF_REVISE*PROF_RATE
  CREATE_OTHER  =  Other survey creation costs
```

Survey Publication Costs (the third survey cost component):

A survey can be published in any of four different media, depending on the method of survey administration. In the spreadsheet, costs are computed for all four methods of survey publication and the cost that matches the selected method of publication is used in computing total cost.

The cost of a scannable booklet is the sum of individual costs for creating a mockup of the booklet, of adding color and litho codes to the booklet if desired, of typesetting the booklet and of printing the booklet. SCAN_BK_OTHER allows the inclusion of other costs in the overall estimate, and also allows a total cost for scannable booklets to replace the other five components. If the total cost is to replace the five components, then the costs of the components must be set to zero.

```
SCAN_BOOK_COST  = (MOCKUP_COST+COLOR_COST+LITHO_COST+TYPE_COST
                       + N_SURVEYS*PRINT_COST+SCAN_BK_OTHER) *
                       OHD_PUBLISH
  N_SCAN_PAGES  = @IF(@MOD(TEMP_SCAN,4)=0,TEMP_SCAN,
                       4*(@INT(TEMP_SCAN/4)+1))
    TEMP_SCAN   = 3+N_OPEN/5+N_CHOICE/12+N_MULTR/60
EACH_SCAN_BOOK  = SCAN_BOOK_COST/N_SURVEYS
```

The cost of creating paper-pencil booklets (requiring keyed data entry) is computed as a function of the number of survey items. The number of items determines the number of pages that need to be typed, which in turn determines the cost of printing the booklet.

```
KEYP_BOOK_COST  = (TYPE_BOOKLET+(BIND_BOOKLET+PRINT_BOOKLET)
                                        *N_SURVEYS)*OHD_PUBLISH
  N_KEYP_PAGES  = @IF(@MOD(TEMP_KEYP,4)=0,TEMP_KEYP,
                      4*(@INT(TEMP_KEYP/4)+1))
    TEMP_KEYP   = 3+N_OPEN/5+N_CHOICE/10+N_MULTR/40
  TYPE_BOOKLET  = N_KEYP_PAGES*KEYP_TYPE_HRS*SECTY_RATE
  PRINT_BOOKLET = N_KEYP_PAGES*KEYP_PRINT
  BIND_BOOKLET  = (Cost of stapling or binding one booklet)
EACH_KEYP_BOOK  = KEYP_PUBL_COST/N_SURVEYS
```

The cost of publishing an online telephone-interview survey is the sum of the cost of programming the survey into the interviewing software plus the cost of diskettes to disseminate the survey. A network-based computer system, of course, would not need diskettes. If scannable or paper-pencil booklets are used to record the data then the cost of those media replaces the online costs.

```
TELE_PUBL_COST    = (Sum of three items below)*OHD_PUBLISH
  progr. time     = N_ITEMS*PROGRAMMER_RATE/TEL_ITEM_PER_HR
  diskette costs  = N_INTERV*COST_DISKETTE
  media cost      = @IF(ONLINE=1,0,SCAN_OR_PAPER)
```

When the survey is to be administered by microcomputer, publication costs include the time to program items into the survey administration software and the cost of creating and sending a diskette to each station each month the survey is conducted. It is assumed that Army Recruiters are overseeing the survey process, and that each Recruiter will need a brief user's manual.

```
COMP_PUBL_COST      = (Sum of four items below)*OHD_PUBLISH
  programming cost  = N_ITEMS*PROGRAMMER_RATE/PC_ITMS_PER_HR
  diskette cost     = N_STATIONS*N_MONTHS*COST_DISKETTE
  copy to diskette  = N_STATIONS*N_MONTHS*DISK_COPY_HRS
                                        *PROGRAMMER_RATE
  user manual cost  = INSTR_BOOK_HRS*PROF_RATE
                                        +INSTR_BK_MISC*N_RECRUITER
```

Costs of Survey Administration

Survey administration costs depend both upon the method of survey administration and on the medium through which the survey is published.

GROUP ADMINISTRATION OF SURVEYS:

When surveys are administered to groups of respondents, administration costs are determined by salaries received by survey administrators and the cost of travel to administration sites. It is assumed here that a consultant trains the assistant-level survey administrators, who then travel to survey

sites. Costs of bulk shipping blank surveys to and from the site are included, as well as Bulk_Fed_Ex shipping completed surveys to the project manager. In this model a group of administrators are trained, and those administrators then travel to survey administration sites a total of "N_ADMINS" times. The sum of costs is weighted by the overhead rate to compute the total administration cost.

```
GROUP_ADM_COST = (TRAIN_COST + (ADMIN_TRAVEL+ADMIN_SALARY
                      +CAR_RENTAL+SHIP_TO_SITE+BULK_FED_EX
                      +RETURN_SURVEYS+SHIP_FROM_SITE)*N_ADMINS)
                      *OHD_ADMINISTER
  where:
  TRAIN_COST    = HOURS_TO_TRAIN*(PROF_RATE+N_ADMINISTR*ASST_RATE)
  ADMIN_TRAVEL = N_ADMINISTR*SITE_TRAVEL
  ADMIN_SALARY = (PER_DIEM+DAILY_ADM_RATE)*ADMIN_DAYS*N_ADMINISTR
```

MAIL ADMINISTRATION OF SURVEYS:

A very specific survey administration protocol is assumed for the calculation of costs for mail administration of surveys. In order to receive N_SURVEYS completed surveys it is necessary to send out N_MAIL_SENT=N_SURVEYS/MAIL_RESP_RATE survey "packets". Some time after the initial mailing, a follow-up post card is sent to the N_MAIL_SENT*(1-RESP_RATE_1) non-respondents. A second mailing of N_MAIL_SENT*(1-RESP_RATE_2) survey packets is sent, followed finally by a letter to N_MAIL_SENT*(1-RESP_RATE_3) non-respondents. Administration costs include addressing envelopes and cards, stuffing survey materials and/or letters into envelopes, and the cost of postage, envelopes, letterhead paper, and printing of letters. The cost of creating or purchasing a mailing list is also included (MAIL_LIST), and the sum of all costs is weighted by the overhead rate.

```
MAIL_ADM_COST     = (Sum of items below) * OHD_ADMINISTER
  COVER_LTR_HRS+WRITE_CARD_HRS)*PROF_RATE
  N_SURVEYS/MAIL_RESP_RATE = N_mail_sent
  MAIL_LIST
  N_MAIL_SENT*CLERICAL_RATE/ENV_PER_HR
  N_MAIL_SENT*CLERICAL_RATE/STUFFED_PER_HR
  N_MAIL_SENT*(LETTERHEAD+PAGE_PRINT_COST+ENV_#10+FIRST_CLASS)
  SURVEY_PACKET*N_MAIL_SENT
  N_MAIL_SENT*CLERICAL_RATE*(1-RESP_RATE_1)/ENV_PER_HR
  (POST_CARD+PRINT_CARD)*(1-RESP_RATE_1)*N_MAIL_SENT
  SURVEY_PACKET*N_MAIL_SENT*(1-RESP_RATE_2)
  N_MAIL_SENT*(1-RESP_RATE_3)*CLERICAL_RATE/ENV_PER_HR
  N_MAIL_SENT*(1-RESP_RATE_3)*CLERICAL_RATE/STUFFED_PER_HR
  @IF(BRE_FOR_RETURN=1#AND#SASE_FOR_RETURN=0,
                      _MAIL_SENT*MAIL_RESP_RATE*BRE,0)
  (LETTERHEAD+PAGE_PRINT_COST+ENV_#10+
                      FIRST_CLASS)*(1-RESP_RATE_3)*N_MAIL_SENT
```

The survey "packet" sent through the mail includes a cover letter, the survey booklet, an incentive to encourage response,

and either a business reply envelope (BRE) or self-addressed, stamped envelope in which to return the survey.

Cost of PACKET_SASE or PACKET_BRE: (the sum of the items below)
- SURVEY_POSTAGE
- LETTERHEAD+PAGE_PRINT_COST
- CLERICAL_RATE/ENV_PER_HR
- CLERICAL_RATE/STUFFED_PER_HR
- SURVEY_BK_COST
- INCENTIVE
- SASE or BRE postage: Envelope cost, plus SURVEY_POSTAGE times number sent if SASE or response-rate-weighted cost of business reply postage if BRE.

TELEPHONE ADMINISTRATION OF SURVEYS:

The cost of administering a survey by telephone includes the time for a professional to train the telephone interviewers as well as travel expenses, per diem expenses and salary for the trainer to travel to the survey administration site. If the same organization creates and conducts the survey, travel expenses should be expected to be zero. The cost of a telephone list is assumed to be the same as the cost of a mailing list for a mail-administered survey. The costs of actually conducting the survey include long distance charges, wages paid to telemarketers, and the cost of the survey media itself.

TELE_ADM_COST = (Sum of items below) * OHD_ADMINISTER
- PROF_RATE*8+TELEMKT_RATE*N_INTERV*HRS_TRAIN_TELE
- TELE_TRAVEL (for trainer travel to interviewer site)
- PER_DIEM
- MAIL_LIST
- N_SURVEYS*HRS_PER_SURVEY*HOURLY_LONG_D
- N_SURVEYS*HRS_PER_SURVEY*TELEMKT_RATE
- @IF(ONLINE=1,ONLINE_DATA,SCAN_OR_PAPER)

Costs associated with the method of recording data:
- ONLINE_DATA = TELE_TRAVEL+PER_DIEM+8*ASST_RATE+BULK_FED_EX
  (A technician travels to an online administration site to install software; ships the data tape afterwards)
- SCAN_OR_PAPER (Cost of printed surveys)
- SHIP_TO_SITE (Cost to ship surveys to admin. site)

MICROCOMPUTER ADMINISTRATION OF SURVEYS:

We assume that Army Recruiters (or someone else at that pay level) will be overseeing people who take surveys on a microcomputer. The bulk of the costs for this administration method arise from the need for those administrators to travel to a training site and to receive training in administering this survey. Secondary costs include the time needed to explain the survey to respondents. The total is weighted by the overhead multiplier, as usual.

```
COMP_ADM_COST  =  (Sum of five items below) * OHD_ADMINISTER
  (SITE_TRAVEL+PER_DIEM+RECR_RATE*8)*N_RECRUITER
  HRS_TRAIN_RECR*PROF_RATE
  N_SURVEYS*RECR_RATE*EXPL_HRS
  N_STATIONS*N_MONTHS*DISK_COPY_HRS*PROGRAMMER_RATE
  N_STATIONS*N_MONTHS*(DISK_MAILER+2*ENV_9X12+LETTERHEAD+
              PAGE_PRINT_COST+2*FED_EX
              +(2/ENV_PER_HR+2/STUFFED_PER_HR)*CLERICAL_RATE)
```

==========

Data Capture Costs (the fifth of five survey cost components):

==========

The cost of capturing data from scannable booklets includes shipping the booklets to the scanning site and writing a program to scan the booklets. The cost of scanning is based on the number of completed surveys. Additional costs arise from coding open-ended items for analysis, and coding some or all items a second time to check coder agreement. Costs of typing open-ended items verbatim also need to be included. After data are scanned, coded and/or typed, they must be written to a magnetic tape and a code book must be created to explain survey items. The cost of the code book depends upon the number of items in the survey.

The cost of shipping the magnetic tape to the project manager is included under Bulk_Fed_Ex, and the cost of shipping the completed surveys to a storage site is Ship_to_Site.

Data capture for scannable booklets:

```
SCAN_CAPTURE     =   (Sum of items below)*OHD_DATA
    SHIP_TO_SITE
    SCAN_PROGRAM
    BOOKLET_SCAN*N_SURVEYS
    ITEM_CODE*(N_OPEN_CODED+N_REL_ITEMS)*N_SURVEYS
    TYPE_OPEN_ENDED*N_OPEN_TYPED*N_SURVEYS
    MAG_TAPE
    CREATE_CODE_BK = CODE_BOOK_ITEM*N_ITEMS
    WRITE_TAPE
    BULK_FED_EX
    SHIP_TO_SITE
```

Data capture for paper-pencil surveys compares to that for scannable booklets. Completed surveys must be shipped to the data entry site and a data entry program written. The cost of data entry depends upon the number of keystrokes (number of survey items). It is assumed that open-ended items are NOT typed by data entry personnel, but are typed separately. Codes for open-ended items, however, are keyed by data entry personnel. The cost of a magnetic tape, of writing the data file to the magnetic tape and of creating the code book need to be included here, as do the costs of shipping the tape and the completed surveys to appropriate locations.

Data Capture (key-entry) for paper-and-pencil surveys:

```
KEYP_CAPTURE      =    (Sum of items below)*OHD_DATA
   SHIP_TO_SITE
   KEYP_PROGRAM
   ITEM_KEY_COST*N_ITEMS*N_SURVEYS
   ITEM_CODE*(N_OPEN_CODED+N_REL_ITEMS)*N_SURVEYS
   TYPE_OPEN_ENDED*N_OPEN_TYPED*N_SURVEYS
   MAG_TAPE
   CREATE_CODE_BK = CODE_BOOK_ITEM*N_ITEMS
   WRITE_TAPE
   BULK_FED_EX
   SHIP_TO_SITE
```

Online data capture is easier than scannable or paper-pencil booklets because survey responses are entered directly into a computer. Costs include the purchase of a magnetic tape and the cost of writing the data file to tape. There may be additional costs (Tele_Data_Merge) for managing the data file before writing it to tape. As usual, a code book must be created for the survey, and costs for coding open-ended items (if any) must be included. There are no costs for typing open-ended items verbatim because they have already been entered into the computer. The Bulk_Fed_Ex cost remains for shipping the data tape to the project manager.

Data Capture for online telephone surveys:

```
TELE_CAPTURE      =    (Sum of items below)*OHD_DATA
   MAG_TAPE
   TELE_DATA_MERGE+WRITE_TAPE
   ITEM_CODE*(N_OPEN_CODED+N_REL_ITEMS)*N_SURVEYS
   CREATE_CODE_BK = CODE_BOOK_ITEM*N_ITEMS
   BULK_FED_EX
```

After surveys have been administered by microcomputer (perhaps by Army Recruiters at recruiting stations), the project manager will have a set of microcomputer diskettes containing survey data. Those diskettes will need to be shipped to a data capture site to be merged into one data file, and that file then written to magnetic tape. Open-ended items (if any) may need to be coded, but need not be typed verbatim since they are already on diskette. A code book needs to be written for the survey, and the diskettes and code book will then be returned to the project manager.

Data Capture for microcomputer-administered surveys:

```
MICRO_CAPTURE     =    (Sum of above items)*OHD_DATA
   BULK_FED_EX
   DISK_DATA_MERGE
   ITEM_CODE*(N_OPEM_CODED+N_REL_ITEMS)*N_SURVEYS
   MAG_TAPE
   WRITE_TAPE
```

```
CREATE_CODE_BK = CODE_BOOK_ITEM*N_ITEMS
BULK_FED_EX
```

APPENDIX E
Statistical Formulas Used to Calculate Random Sampling Error

The most general formulas for computing random sampling error are too complex to be used meaningfully in this spreadsheet. Simplifying assumptions have accordingly been made that will allow comparisons of sampling error for the three sampling methods. The resultant formulas are described below. In all cases, these formulas give the standard error of estimate for the mean for a given item. In these equations, N_Surveys is the number of completed surveys, Item_SD is the observed standard deviation of the item scores and the population is considered to be infinite.

The formulas used in computing sampling error are taken from Kalton's (1983) Introduction to Survey Sampling. Sampling error that is graphed by the spreadsheet is the 95% confidence interval for the population mean, 1.96 times larger than the standard error of estimate (SEE) computed by the formulas, below.

Simple Random Sampling

Random sampling requires that the group of people surveyed be a random sample of the population as a whole. When that is the case, then sampling error can be computed as

$$SEE = \frac{Item\_SD}{N\_Surveys - 1} .$$

Random sampling error is computed in this way for all item types when simple random sampling is assumed.

Stratified Sampling

A principal advantage of adopting a stratified sampling plan is that, when sampling from strata is proportional to the size of each stratum, better estimates (smaller sampling error) result than with simple random sampling. This greater efficiency per respondent results because part of the error is "controlled" when strata are created. Sampling error within strata and overall are both reduced as a result.

Stratified sampling is assumed to be the dividing of the total survey population into a set of homogeneous strata. Survey respondents are then randomly selected from within those strata.

The spreadsheet assumes that the reduction in sampling error is equal in all strata and for all item types. In that case, sampling error is estimated as

$$SEE = \frac{Stratum\_SD\_Decr * Item\_SD}{N\_Surveys - 1} .$$

In this equation, Stratum_SD_Decr is the standard deviation of an item within strata expressed as a proportion of the overall item standard deviation. That is, if the standard deviation of an item is five percent smaller than in the entire sample, Stratum_SD_Decr would be 0.95, and the sampling error for that item in a stratified sample would be about 95% the size of the sampling error under simple random sampling.

Cluster Sampling

Cluster sampling is often used as a cost-saving convenience. Random sampling error is often larger than under simple random sampling (for a given sample size), but the cost of obtaining that sample may be much lower. If the cost of cluster sampling is low enough, then additional subjects can be sampled to achieve the same precision at a lower cost, or a higher precision at the same cost.

In our application, cluster sampling is a dividing of the total population into equal-sized clusters and then randomly selecting a group of clusters. All respondents within the selected clusters are then surveyed.

For the purposes of this spreadsheet, it was assumed that all clusters were the same size. Then the sampling error for any specific item can be estimated as

$$SEE = \frac{SD\_Clus\_Means}{\left(\frac{1}{N\_Clus\_Tot} - \frac{1}{N\_Clus\_Samp}\right)} .$$

In this equation, SD_Clus_Means is the standard deviation of the cluster mean scores for the item, N_Clus_Tot is the total number of clusters, and N_Clus_Samp is the number of clusters sampled. The spreadsheet user is only asked for an estimate of the standard deviation across clusters of mean scores of 5-point Likert items. The spreadsheet assumes that the other four types of item (4-point and 7-point Likert, yes-no and demographic) have a standard deviation of item means across clusters in proportion to the item standard deviations overall.

Computing Item Standard Deviations

The user is required to enter standard deviations for Likert-scaled items. These item standard deviations should be as observed in the survey sample. Different values are requested for 4-point, 5-point and 7-point Likert items since, in practice, different values are typically observed for these item types (7-point items tend to have the largest standard deviations). Data from other continuous-scaled items could be entered as a Likert item, and its standard error would be graphed properly.

For demographic items and yes-no items, the standard deviation is a function only of the percent selecting the response option of interest. For that reason, the user need enter only the percent of respondents selecting the survey option. The item standard deviation is then computed using the usual formula,

$$Item\_SD = \frac{Proportion * (1 - Proportion)}{N\_Surveys - 1}.$$

In this equation, "Proportion" refers to the proportion (not percent) of respondents selecting the survey option of interest. Note that this proportion is NOT for an entire demographic item, but only for one response option of the item. A different standard deviation should be observed, for instance, when estimating the proportion of Black respondents than when estimating the proportion of Whites.

The standard deviation entered by the spreadsheet user (if Likert item) or computed from the proportion of respondents entered (if demographic or yes-no) is then used in the above equations to compute the standard error of estimate for each item type.

APPENDIX F
Spreadsheet Range Names and Cell Formulas

Range Names:

ADMIN_DAYS	B:C82..B:C82	Days at each group admin site per admin session
ADMIN_LOOKUP	C:A213..C:D217	Table to tie admin method to survey cost
ADMIN_METHOD	B:C223..B:C223	Survey admin method: 1=Grp, 2=Mail, 3=Tele, 4=micro
ADMIN_SALARY	C:A69..C:A69	Pay + per diem for group survey admin session
ADMIN_TRAVEL	C:A67..C:A67	RT transportation to group admin site
ALL_OTHER_COSTS	B:C183..B:C183	
ASST_PILOT	B:C46..B:C46	Rsch. Asst. hours to administer, analyze pilot survey
ASST_RATE	B:C144..B:C144	Hourly pay rate for research assistants
AUTO_MODE	D:A342..D:A342	
AWARD_COST	C:B11..C:B11	Cost of awarding bids for the project
BIND_BOOKLET	B:C72..B:C72	Cost of stapling/binding 1 paper-pencil booklet
BOOKLET_SCAN	B:C66..B:C66	Cost of scanning one survey booklet
BRE	B:C164..B:C164	Cost of BRE to return mail survey
BRE_FOR_RETURN	C:B134..C:B134	Return mail survey by BRE (=1) or SASE (=0)?
BULK_FED_EX	B:C161..B:C161	Cost of overnight shipping a package
CAR_RENTAL	B:C153..B:C153	Daily rate for rental of automobile
CLERICAL_RATE	B:C147..B:C147	Hourly rate for clerical workers
CODE_BOOK_ITEM	B:C137..B:C137	Cost to create code book for one survey item
COLOR_COST	B:C56..B:C56	Cost of adding color to scannable booklet
COMP_ADM_COST	C:B83..C:B83	Cost of administering survey on microcomputer
COMP_PUBL_COST	C:B52..C:B52	Cost of publishing microcomputer admin. survey
COMP_TOTAL	C:B240..C:B240	Total cost for microcomputer-administered survey
CONTENT_TIME	B:C43..B:C43	Professional hours to determine content, N items
COSTS_AND_LABOR	A:D93..A:D93	
COST_ADM	E:B13..E:C16	
COST_DISKETTE	B:C178..B:C178	Cost of microcomputer diskette
COST_N	E:B27..E:D32	
COST_PER_PERSON	C:B211..C:B211	Total survey cost per survey sent
COVER_LTR_HRS	B:C106..B:C106	Hours professional time to write cover letter
CREATE_CODE_BK	C:B202..C:B202	Cost of creating code book for full survey
CREATE_OTHER	B:C52..B:C52	
CREA_COST	C:B23..C:B23	Cost of creating survey (design/pilot/revise)
CREA_ITEM_COST	C:B28..C:B28	Cost per item of creating survey
DAILY_ADM_RATE	B:C84..B:C84	Daily pay rate for each group administrator
DATA_ANALYSIS	C:B15..C:B15	
DATA_ANAL_HRS	B:C34..B:C34	
DATA_CAPTURE	C:B154..C:B154	
DELIVERABLES	C:B13..C:B13	Cost of receiving/processing deliverables
DELIV_PROF	B:C30..B:C30	Professional time to receive/process deliverables
DELIV_SECTY	B:C29..B:C29	Secretary time to receive/process deliverables
DESIGN_COST	C:B24..C:B24	Cost of designing initial survey
DISK_COPY_HRS	B:C99..B:C99	Programmer hrs: copy computer-admin. survey to diskette
DISK_DATA_MERGE	B:C102..B:C102	Cost of managing data set for computer-admin survey
DISK_MAILER	B:C175..B:C175	Cost of mailer for microcomputer diskette
EACH_KEYP_BOOK	C:B45..C:B45	
EACH_SCAN_BOOK	C:B37..C:B37	
ENV_#10	B:C170..B:C170	Cost of #10 envelope
ENV_9X12	B:C172..B:C172	Cost of 9"x12" envelope
ENV_PER_HR	B:C109..B:C109	
ERROR	A:D204..A:D204	
ERROR_N	E:B44..E:C49	
EVALUATE_BIDS	B:C27..B:C27	Professional hours to evaluate bids
EXPL_HRS	B:C94..B:C94	
FED_EX	B:C160..B:C160	Cost of overnight priority letter
FILE	A:D231..A:D231	
FINAL_PROF	B:C37..B:C37	
FINAL_REPORT	C:B16..C:B16	
FINAL_SECTY	B:C36..B:C36	
FIRST_CLASS	B:C158..B:C158	Postage for first class letter
GRAPH	A:D187..A:D187	
GRAPH_NAME	B:C305..B:C305	
GRAPH_TABLE	B:B301..B:D303	
GROUP_ADM_COST	C:B74..C:B74	Cost of group administering survey project
GROUP_TOTAL	C:B219..C:B219	Total cost for group-administered survey
HOURLY_LONG_D	B:C123..B:C123	Long distance or WATS cost per hour
HOURS_TO_TRAIN	B:C81..B:C81	N hours needed to train a group survey administrator

HRS_PER_SURVEY	B:C125..B:C125	
HRS_TRAIN_RECR	B:C97..B:C97	Hours to train recruiter to administer computer survey
HRS_TRAIN_TELE	B:C124..B:C124	Hours needed to train telephone interviewers
INCENTIVE	B:C179..B:C179	Cost of incentive for mail survey respondent
INFO_PROF	B:C32..B:C32	Professional hours to disseminate project info
INFO_PUBLISH	C:B14..C:B14	Cost of publishing project info/results
INFO_SECTY	B:C31..B:C31	Secretary time to disseminate project info
INSTR_BK_MISC	B:C91..B:C91	
INSTR_BOOK_HRS	B:C90..B:C90	Prof. time to write computer-admin manual
ITEM_CODE	B:C135..B:C135	Cost of coding one open-ended item on one survey
ITEM_KEY_COST	B:C77..B:C77	Per-item cost for data entry
ITEM_SD	E:B57..E:E61	
ITEM_TIME	B:C44..B:C44	Professional hours to create items
ITEM_TYPE	B:C287..B:C287	
ITERATE	B:C292..B:C292	
ITERATE_COST_N	D:B18..D:B18	
ITERATE_RESP_N	D:B159..D:B159	
ITER_COST_ADM	D:B74..D:B74	
ITER_ERROR_N	D:B112..D:B112	
ITER_MENU	A:D224..A:D224	
ITER_RESP_ADM	D:B209..D:B209	
KEYP_BOOK_COST	C:B39..C:B39	
KEYP_CAPTURE	C:B181..C:B181	Data capture costs for paper-and-pencil survey
KEYP_PRINT	B:C71..B:C71	Cost to print 1 page in paper-pencil booklet
KEYP_PROGRAM	B:C76..B:C76	Cost of creating data entry program
KEYP_TYPE_HRS	B:C70..B:C70	Hours to type 1 page of paper-pencil booklet
LEGEND_COST_ADM	E:C18..E:C18	
LEGEND_COST_N	E:C34..E:C34	
LEGEND_ERROR_N	E:C51..E:C51	
LEGEND_RESP_ADM	E:C80..E:C80	
LEGEND_RESP_N	E:C94..E:H94	
LETTERHEAD	B:C171..B:C171	Cost of one sheet letterhead paper
LITHO_COST	B:C57..B:C57	Cost of adding litho codes to scannable booklets
MACRO_COST_ADM	D:A68..D:A68	
MACRO_COST_N	D:A10..D:A10	
MACRO_ERROR_N	D:A110..D:A110	
MACRO_RESP_ADM	*D:A203..D:A203*	
MACRO_RESP_N	D:A151..D:A151	
MAG_TAPE	B:C180..B:C180	Cost of computer magnetic tape
MAIL	A:D106..A:D106	
MAIL_ADM_COST	C:B101..C:B101	Cost of mail administration of surveys
MAIL_BOOKLET	B:C230..B:C230	
MAIL_LIST	B:C108..B:C108	Total cost for mailing list
MAIL_RESP_RATE	B:C114..B:C114	Final mail survey response rate
MAIL_TOTAL	C:B226..C:B226	Total cost of mail-administered survey
MENU1	A:D55..A:D55	
METHOD	A:D99..A:D99	
MGMT_COST	C:B8..C:B8	Overall cost of survey project management
MGMT_OTHER	B:C39..B:C39	Cost of other project management expenses
MICRO_CAPTURE	C:B199..C:B199	Cost of data capture for microcomputer-admin. survey
MISC_RFP	B:C24..B:C24	Secretary hours to answer bidder questions, etc.
MOCKUP_COST	B:C55..B:C55	Cost of scannable booklet mock-up
MODE	A:D63..A:D63	
N_ADMINISTR	B:C85..B:C85	N of administrators at each group admin site
N_ADMINS	B:C83..B:C83	N of group survey administration sessions
N_CHOICE	B:C9..B:C9	N multiple-choice items
N_CLUS_SAMP	B:C192..B:C192	
N_CLUS_TOT	B:C191..B:C191	
N_FIXED	B:C9..B:C9	
N_INTERV	B:C118..B:C118	N of telephone survey interviewers to train
N_ITEMS	B:C8..B:C8	Total N of survey items
N_KEYP_PAGES	C:B40..C:B40	N pages needed for paper-pencil booklet
N_MAIL_SENT	C:A88..C:A88	
N_MONTHS	B:C95..B:C95	Months duration for computer admin. survey
N_MULTR	B:C10..B:C10	N of multiple-response categories
N_OPEN	B:C11..B:C11	Total N open-ended items
N_OPEN_CODED	B:C13..B:C13	N open-ended items that will be coded
N_OPEN_TYPED	B:C12..B:C12	N open-ended items that will be transcribed verbatim
N_PER_CLUS	B:C193..B:C193	
N_RECRUITER	B:C98..B:C98	N recruiters trained for computer survey administration
N_REL_ITEMS	B:C14..B:C14	N open-ended items coded twice for rater reliability check
N_SCAN_PAGES	C:B35..C:B35	N pages for scannable booklet (mult of 4)

N_STATIONS	B:C96..B:C96	N locations for computer-admin surveys
N_STRATA	B:C188..B:C188	
N_SURVEYS	B:C6..B:C6	Total N of surveys completed
OHD_ADMINISTER	B:C212..B:C212	
OHD_CREATION	B:C210..B:C210	
OHD_DATA	B:C213..B:C213	
OHD_MANAGEMENT	B:C209..B:C209	
OHD_PUBLISH	B:C211..B:C211	
ONGOING_COST	C:B12..C:B12	Cost of receiving/disseminating project info.
ONLINE	C:B149..C:B149	Is telephone survey using online data capture?
ONLINE_DATA	C:B150..C:B150	Cost of shipping online data to project manager
ONL_SCAN_PAPER		Is tele survey online (=1), scannable (=0), or paper-pencil(=0)?
OTHER_COSTS	D:A327..D:A327	
PACKET_BRE	C:B122..C:B122	
PACKET_SASE	C:B113..C:B113	
PAGE_PRINT_COST	B:C174..B:C174	Cost of printing on letterhead paper
PAPER_PENCIL	C:B131..C:B131	Is the survey paper-and-pencil (=1) or scannable?
PARAM	A:D76..A:D76	
PC_ITMS_PER_HR	B:C89..B:C89	
PC_PROGR_TIME	C:B53..C:B53	Hours to program survey into telemkt. data software
PER_DIEM	B:C151..B:C151	Per diem rate for travel expenses
PHONE_LIST	B:C126..B:C126	Cost of purchasing/creating telephone list
PILOT_COST	C:B25..C:B25	Cost of pilot-testing survey
POSTAGE	D:A284..D:A284	
POST_CARD	B:C159..B:C159	Postage for post card
PRINT_BOOKLET	C:B43..C:B43	Cost of printing 1 paper-pencil survey booklet
PRINT_CARD	B:C173..B:C173	Cost of print post card
PRINT_COST	B:C59..B:C59	Cost of printing one scannable booklet
PROCESS_BIDS	B:C26..B:C26	Secretary hours to process bids
PROF_PILOT	B:C48..B:C48	Professional hours for pilot test
PROF_RATE	B:C142..B:C142	Hourly pay rate for professional consultant
PROF_REVISE	B:C50..B:C50	Professional hours to revise after pilot survey
PROGRAMMER_RATE	B:C141..B:C141	Hourly pay rate for computer programmer
PROPN_DEMOG	B:C204..B:C204	
PROPN_YES-NO	B:C203..B:C203	
PUBLISH_RFP	B:C23..B:C23	Secretary hours to publish proposal
QUIT	A:D244..A:D244	
RANGE_LABELS	B:I1..B:K171	[Spread sheet location for table of range names, labels]
RECRUIT	A:D134..A:D134	
RECRUIT_SURVEY	B:C264..B:C264	
RECR_METHOD	A:D166..A:D166	
RECR_RATE	B:C145..B:C145	hourly pay rate for US Army recruiters
RECR_SAMP	A:D155..A:D155	
RESP_ADM	E:B75..E:C78	
RESP_N	E:D87..E:E92	
RESP_RATE_1	B:C111..B:C111	Initial response rate (before reminder card)
RESP_RATE_2	B:C112..B:C112	Response rate before sending 2nd survey packet
RESP_RATE_3	B:C113..B:C113	Response rate after 2nd survey packet
RETURN_METHOD	B:C235..B:C235	
RETURN_POSTAGE	A:D116..A:D116	
RETURN_SURVEYS	B:C167..B:C167	Cost of bulk returning group admin.surveys from site
REVISE_COST	C:B26..C:B26	Cost of revising pilot survey to final form
RFP_COST	C:B10..C:B10	Cost of soliciting bids for the project
SAMP	A:D176..A:D176	
SAMPL_COST	C:B9..C:B9	Cost of selecting and implementing sampling plan
SAMPL_DECISION	B:C18..B:C18	Professional hours to select sampling plan
SAMPL_PRACTICAL	B:C19..B:C19	Professional hours to implement sampling plan
SAMP_METH	B:C253..B:C253	Survey sampling method selected
SASE	B:C163..B:C163	Cost of SASE to return mail survey
SASE_FOR_RETURN	C:B133..C:B133	Return mail survey by SASE (=1) or BRE (=0)?
SASE_OR_BRE	C:B132..C:B132	Cost of mail survey return postage, SASE or BRE
SAVE_GRAPH	A:D237..A:D237	
SCANNABLE	C:B130..C:B130	
SCAN_BK_OTHER	B:C61..B:C61	
SCAN_BOOK_COST	C:B34..C:B34	Costs of printing all scannable booklets
SCAN_CAPTURE	C:B168..C:B168	Cost of data capture for scannable booklets
SCAN_OR_PAPER	C:B151..C:B151	Cost of shipping booklets from tele.survey site
SCAN_PROGRAM	B:C65..B:C65	Cost of programming scanner for the survey
SD_CLUS_5	B:C194..B:C194	
SD_LIKERT-4	B:C202..B:C202	Approx SD of 4-option Likert item
SD_LIKERT-5	B:C201..B:C201	Approx SD of 5-response Likert item
SD_LIKERT-7	B:C200..B:C200	Approx SD of 7-option Likert item

SECTY_DESIGN	B:C45..B:C45	Secretarial hours to create survey drafts
SECTY_PILOT	B:C47..B:C47	Secretary hours for pilot test
SECTY_RATE	B:C143..B:C143	Hourly pay rate for secretarial work
SECTY_REVISE	B:C49..B:C49	Secretarial hours to revise survey after pilot
SHIP_FROM_SITE	B:C166..B:C166	Cost of bulk shipping blank surveys from group adm.site
SHIP_TO_SITE	B:C165..B:C165	Cost of bulk shipping surveys to group admin site
SITE	A:D139..A:D139	
SITE_TRAVEL	B:C152..B:C152	Cost of R.T. travel to survey admin site
STRATUM_SD_DECR	B:C189..B:C189	
STUFFED_PER_HR	B:C110..B:C110	
SUPPLIES	D:A309..D:A309	
SURVEY	A:D84..A:D84	
SURVEY_BK_COST	C:B129..C:B129	Total cost of mail surveys bks, scannable or paper-pencil
SURVEY_COST	C:B210..C:B210	
SURVEY_MEDIUM	B:C243..B:C243	
SURVEY_PACKET	C:B103..C:B103	
SURVEY_POSTAGE	B:C162..B:C162	Cost of mailing out the survey packet
TELE	A:D124..A:D124	
TELEMKT_RATE	B:C146..B:C146	Hourly pay rate for telephone interviewers
TELE_ADM_COST	C:B146..C:B146	Cost of administering telephone survey
TELE_CAPTURE	C:B189..C:B189	Data capture costs for online telephone survey
TELE_DATA_MERGE	B:C130..B:C130	Cost of managing online tele. survey data
TELE_MEDIUM	B:C243..B:C243	
TELE_PUBL_COST	C:B47..C:B47	Cost to publish telephone survey
TELE_TOTAL	C:B233..C:B233	Total cost for telephone survey administration
TELE_TRAVEL	B:C154..B:C154	R.T. travel cost for trainer of telephone interviewers
TEL_ITEM_PER_HR	B:C119..B:C119	
TEMP_ADMIN	E:C20..E:C20	
TEMP_KEYP	C:B41..C:B41	Temp cell used in calculations
TEMP_N	E:C36..E:C36	
TEMP_SCAN	C:B36..C:B36	[temp location used for calculations]
TEMP_SD	E:C53..E:C53	
TRAIN_COST	C:A66..C:A66	Cost of training group survey administrators
TRAVEL	D:A272..D:A272	
TYPE_BOOKLET	C:B42..C:B42	Cost of typing paper-pencil survey booklet
TYPE_COST	B:C58..B:C58	Cost of typesetting scannable booklets
TYPE_OPEN_ENDED	B:C136..B:C136	Cost to type one open-ended item for 1 respondent
TYPE_RFP	B:C22..B:C22	Secretary hours to type proposal
WAGES	D:A253..D:A253	
WRITE_CARD_HRS	B:C107..B:C107	Hours prof. time to write post card
WRITE_RFP	B:C21..B:C21	Professional hours to write proposal
WRITE_TAPE	B:C134..B:C134	Cost of writing data to magnetic tape
X_AXIS	B:C279..B:C279	
X_AXIS_TABLE	B:C299..B:D300	
X_MENU	A:D212..A:D212	
Y_AXIS	B:C274..B:C274	
Y_MENU	A:D194..A:D194	
\O	A:B55..A:B55	
\M	A:B55..A:B55	

Level A: Cell Formulas

```
A:A6: +"        "&@CHAR(201)
A:B6: @CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)
A:C6: @CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)
A:D6: @CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)
A:E6: @CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)
A:F6: @CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)
A:G6: @CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(187)
A:A7: +"        "&@CHAR(186)
A:G7: +"    "&@CHAR(186)
A:A8: +"        "&@CHAR(186)
A:G8: +"    "&@CHAR(186)
A:A9: +"        "&@CHAR(186)
A:B9: '            SURVEY COSTS AND ERRORS
A:G9: +"    "&@CHAR(186)
A:A10: +"        "&@CHAR(186)
A:G10: +"    "&@CHAR(186)
A:A11: +"        "&@CHAR(186)
A:G11: +"    "&@CHAR(186)
A:A12: +"        "&@CHAR(186)
A:B12: '      A spreadsheet program written for the
A:G12: +"    "&@CHAR(186)
A:A13: +"        "&@CHAR(186)
A:G13: +"    "&@CHAR(186)
A:A14: +"        "&@CHAR(186)
A:B14: '      United States Army Research Institute
A:G14: +"    "&@CHAR(186)
A:A15: +"        "&@CHAR(186)
A:G15: +"    "&@CHAR(186)
A:A16: +"        "&@CHAR(186)
A:B16: '                      under
A:G16: +"    "&@CHAR(186)
A:A17: +"        "&@CHAR(186)
A:G17: +"    "&@CHAR(186)
A:A18: +"        "&@CHAR(186)
A:B18: '           ARI Delivery Order # 2044
A:G18: +"    "&@CHAR(186)
A:A19: +"        "&@CHAR(186)
A:G19: +"    "&@CHAR(186)
A:A20: +"        "&@CHAR(186)
A:B20: '                   Version 1.0
A:G20: +"    "&@CHAR(186)
A:A21: +"        "&@CHAR(186)
A:B21: '                 February 1991
A:G21: +"    "&@CHAR(186)
A:A22: +"        "&@CHAR(186)
A:G22: +"    "&@CHAR(186)
A:A23: +"        "&@CHAR(200)
A:B23: @CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)
A:C23: @CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)
A:D23: @CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)
A:E23: @CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)
A:F23: @CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)
A:G23: @CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(205)&@CHAR(188)
A:A33: 'Menu tree on this sheet
A:A34: \=
A:B34: \=
A:C34: \=
A:D34: \=
A:E34: \=
A:F34: \=
A:B53: 'Main menu:
A:B55: '{goto}a:a1~
A:D55: ^Mode
A:E55: ^Parameter
A:F55: ^Admin
A:G55: ^Recruit
A:H55: ^Sampling
A:I55: ^Graph
A:J55: ^File
A:K55: ^Quit
```

```
A:B56: '{frameoff}
A:D56: 'Automatic or user-controlled single-project time and cost estimates
A:E56: 'Set survey size and underlying cost parameters
A:F56: 'Select method of administering survey
A:G56: 'Survey administered to recruits or to others?
A:H56: 'Specify sampling method
A:I56: 'Create a plot
A:J56: 'Save worksheet or plots
A:K56: 'End this session
A:B57: '/xmMenu1~
A:D57: '/xmMode~
A:E57: '/xmParam~
A:F57: '{goto}Admin_Method~
A:G57: '{goto}Recruit_Survey~
A:H57: '{goto}samp_meth~
A:I57: '{goto}y_axis~
A:J57: '/xmFile~
A:K57: '/xmQuit~
A:F58: '{L 2}{u 7}
A:G58: '{L 2}{U 9}
A:H58: '{u 8}{L 2}
A:I58: '{u 7}{L 2}
A:F59: '{goto}Admin_Method~
A:G59: '{goto}Recruit_Survey~
A:H59: '{goto}samp_Meth~
A:I59: '/xmGraph~
A:F60: '/xmMethod~
A:G60: '/xmRecruit~
A:H60: '/xmSamp~
A:B63: 'Mode menu:
A:D63: ^Systematic
A:E63: ^Individual
A:F63: ^Return
A:D64: 'Automatic entry of ALL time and cost estimates
A:E64: 'User-controlled entry of time and cost estimates
A:F64: 'Return to main menu
A:D65: '{branch auto_mode}
A:E65: '{goto}B:a1~
A:F65: '/xmMenu1~
A:D66: '/xmMenu1~
A:E66: '/xgpe
A:E67: '/ruB:c6..B:c213~
A:E68: '/rpB:c8..B:c8~
A:E69: '{goto}{?}~
A:E70: '{L 2}{R 2}
A:E71: '{getnumber "Please enter the estimate now.  ",@cellpointer("coord")}~
A:E72: '/wgpd
A:E73: '/xmMode~
A:B76: 'Param menu:
A:D76: ^Survey
A:E76: ^Costs_and_Labor
A:F76: ^Return
A:D77: 'Survey size and scope
A:E77: 'Underlying survey costs
A:F77: 'Return to main menu
A:D78: '{goto}N_Surveys~
A:E78: '{goto}Programmer_rate~
A:F78: '/xmMenu1~
A:D79: '{u 3}{L 2}
A:E79: '{L 2}{U 3}
A:D80: '/xmSurvey~
A:E80: '/xmCosts_and_Labor~
A:B84: 'Survey param.
A:D84: ^N_Survey
A:E84: 'Fixed_Fmt
A:F84: 'Mult_R
A:G84: ^Open_Items
A:H84: ^Typed_Op
A:I84: ^Coded_Op
A:J84: 'Item_Rel
A:K84: ^Return
A:B85: '      sub-menu:
```

```
A:D85: 'N of surveys to be completed
A:E85: 'N of fixed-format items (multiple choice, yes/no, etc.)
A:F85: 'N of multiple-response categories
A:G85: 'Number of open-ended items
A:H85: 'N open-ended items to be typed verbatim
A:I85: 'N open-ended items to be coded
A:J85: 'N open-ended items coded twice (for reliability check)
A:K85: 'Return to Parameter menu
A:D86: '{goto}N_Surveys~
A:E86: '{goto}N_choice~
A:F86: '{goto}N_MultR~
A:G86: '{goto}N_Open~
A:H86: '{goto}N_open_typed~
A:I86: '{goto}N_open_coded~
A:J86: '{goto}N_rel_items~
A:K86: '/xmParam~
A:D87: '{getnumber "Enter the number of completed surveys:  ",N_surveys}~
A:E87: '{getnumber "Enter the number of fixed-format items:  ",n_choice}~
A:F87: '{getnumber "Enter the number of multiple-response categories:  ",n_multr}~
A:G87: '{getnumber "Enter the number of open-ended items:  ",n_open}~
A:H87: '{getnumber "N of open-ended items to be typed verbatim:  ",n_open_typed}~
A:I87: '{getnumber "N of open-ended items to be coded:  ",n_open_coded}~
A:J87: '{getnumber "N open-ended to be coded twice for reliability check:  ",n_rel_items}~
A:D88: '/xmSurvey~
A:E88: '/xmSurvey~
A:F88: '/xmSurvey~
A:G88: '/xmSurvey~
A:H88: '/xmSurvey~
A:I88: '/xmSurvey~
A:J88: '/xmSurvey~
A:B93: 'Costs_and_Labor
A:D93: 'Wages
A:E93: 'Travel
A:F93: 'Postage
A:G93: 'Supplies
A:H93: ^Other
A:I93: ^Return
A:B94: '      sub-menu:
A:D94: 'Salary and wage scales
A:E94: 'Travel and per-diem expenses
A:F94: 'Postage and shipping costs
A:G94: 'Office and computer supplies
A:H94: 'Other survey costs
A:I94: 'Return to Parameter menu
A:D95: '{branch WAGES}
A:E95: '{Branch TRAVEL}
A:F95: '{Branch POSTAGE}
A:G95: '{Branch SUPPLIES}
A:H95: '{branch Other_costs}
A:I95: '/xmParam~
A:D96: '/xmCosts_and_Labor~
A:E96: '/xmCosts_and_Labor~
A:F96: '/xmCosts_and_Labor~
A:G96: '/xmCosts_and_Labor~
A:H96: '/xmCosts_and_Labor~
A:B99: 'Method menu:
A:D99: ^Group
A:E99: ^Mail
A:F99: ^Telephone
A:G99: ^Computer
A:H99: ^Return
A:D100: 'Group-administered, with optically-scannable survey forms
A:E100: 'Mail-administered survey
A:F100: 'Telephone-administered survey
A:G100: 'Microcomputer-administered survey
A:H100: 'Return to main menu
A:D101: '^G~
A:E101: '^M~
A:F101: '^T~
A:G101: '^C~
A:H101: '/xmMenu1~
A:D102: '/xmMenu1~
```

```
A:E102: '{d 3}{L 2}
A:F102: '{goto}Tele_Medium~
A:G102: '/xmMenu1~
A:E103: '/xmMail~
A:F103: '/xmTele~
A:B106: 'Mail sub-menu:
A:D106: ^Scannable
A:E106: ^Paper-Pencil
A:F106: 'BRE_or_SASE
A:G106: ^Return
A:D107: 'Optically scannable survey booklet
A:E107: 'Paper-and-pencil survey booklet
A:F107: 'Use SASE or BRE for return postage
A:G107: 'Return to Admin menu
A:D108: '{goto}Admin_method~
A:E108: '{goto}Admin_method~
A:F108: '{goto}Admin_method~
A:G108: '{goto}Admin_Method~
A:D109: '{L 2}{U 7}
A:E109: '{L 2}{U 7}
A:F109: '{L 2}{U 7}
A:G109: '{L 2}{u 7}
A:D110: '{goto}Mail_Booklet~
A:E110: '{goto}Mail_Booklet~
A:F110: '{goto}Return_Method~
A:G110: '{goto}Admin_Method~
A:D111: '^S~
A:E111: '^P~
A:F111: '/xmReturn_Postage~
A:G111: '/xmMethod~
A:D112: '{U 4}{L 2}
A:E112: '{U 4}{L 2}
A:D113: '/xmMail~
A:E113: '/xmMail~
A:B116: 'Return_postage
A:D116: 'SASE
A:E116: 'BRE
A:F116: ^Return
A:B117: '    sub-menu:
A:D117: 'Self-addressed stamped envelope
A:E117: 'Business reply envelope
A:F117: 'Return to Mail menu
A:D118: '{goto}Return_Method~
A:E118: '{goto}Return_Method~
A:F118: '{U 9}{L 2}
A:D119: '^S~
A:E119: '^B~
A:F119: '/xmMail~
A:D120: '{U 9}{L 2}
A:E120: '{U 9}{L 2}
A:D121: '/xmMail~
A:E121: '/xmMail~
A:B124: 'Tele sub-menu:
A:D124: 'Online
A:E124: 'Scan able
A:F124: 'Paper-Pencil
A:G124: ^Return
A:D125: 'Online data capture
A:E125: 'Optically scannable survey booklet
A:F125: 'Paper-and-pencil survey booklet
A:G125: 'Return to Admin menu
A:D126: '{goto}Tele_Medium~
A:E126: '{goto}Tele_Medium~
A:F126: '{goto}Tele_Medium~
A:G126: '{goto}Admin_Method~
A:D127: '^O~
A:E127: '^S~
A:F127: '^P~
A:G127: '{L 2}{u 7}
A:D128: '{goto}Admin_Method~
A:E128: '{goto}Admin_Method~
A:F128: '{goto}Admin_Method~
```

```
A:G128: '{goto}Admin_Method~
A:D129: '{L 2}{u 7}
A:E129: '{L 2}{u 7}
A:F129: '{L 2}{u 7}
A:G129: '/xmMethod~
A:D130: '{goto}Admin_Method~
A:E130: '{goto}Admin_Method~
A:F130: '{goto}Admin_Method~
A:D131: '/xmMethod~
A:E131: '/xmMethod~
A:F131: '/xmMethod~
A:B134: 'Recruit menu:
A:D134: ^Yes
A:E134: ^No
A:F134: ^Return
A:D135: 'Survey of Army recruits or prospects
A:E135: 'Survey not restricted to recruiting process
A:F135: 'Return to main menu
A:D136: '^Y~
A:E136: '^N~
A:F136: '/xmMenu1~
A:D137: '/xmSite~
A:E137: '/xmMenu1~
A:B139: 'Site sub-menu:
A:D139: ^Init.Appt.
A:E139: ^Application
A:F139: ^Contract
A:G139: ^Pt.of_Accession
A:H139: ^Return
A:D140: 'Survey during initial appointment with recruiter
A:E140: 'Survey at time of application for enlistment
A:F140: 'Survey when contract is signed
A:G140: 'Survey at pt.of accession: group admin/scannable forms/cluster sampling
A:H140: 'Return to main menu
A:D141: '^I~
A:E141: '^A~
A:F141: '^C~
A:G141: '^P~
A:H141: '/xmMenu1~
A:D142: '{goto}samp_meth~
A:E142: '{goto}samp_meth~
A:F142: '{goto}samp_meth~
A:G142: '{let Admin_Method,"G"}~
A:D143: '{U 8}{L 2}
A:E143: '{U 8}{L 2}
A:F143: '{U 8}{L 2}
A:G143: '{let Mail_booklet,"S"}
A:D144: '{goto}Samp_Meth~
A:E144: '{goto}Samp_Meth~
A:F144: '{goto}Samp_Meth~
A:G144: '{goto}Samp_Meth~{U 8}{L 2}
A:D145: '/xmRecr_Samp~
A:E145: '/xmRecr_Samp~
A:F145: '/xmRecr_Samp~
A:G145: '{goto}Samp_Meth~
A:G146: '^C~
A:G147: '{goto}N_Clus_tot~{L 2}{u 5}
A:G148: '{goto}N_clus_tot~
A:G149: '{getnumber "How many clusters are ther^, total?  ",n_clus_tot}~
A:G150: '{D}{getnumber "How many clusters will be sampled?  ",n_clus_samp}~
A:G151: '{d 2}{getnumber "What is the SD of cluster mean scores for 5-pt Likert item?  ",sd_clus_5}~
A:G152: '/xmMenu1~
A:B155: 'Recr_samp
A:D155: ^Random
A:E155: ^Cluster
A:F155: ^Return
A:B156: '    sub-menu:
A:D156: 'Random:  Simple random sampling
A:E156: 'Cluster:  Random selection of clusters
A:F156: 'Return to site menu
A:D157: '^R~
A:E157: '^C~
```

```
A:F157: '/xmSite~
A:D158: '{goto}Admin_Method~
A:E158: '{goto}N_Clus_tot~{L 2}{u 5}
A:D159: '{L 2}{u 7}
A:E159: '{goto}N_clus_tot~
A:D160: '{goto}Admin_Method~
A:E160: '{getnumber "How many clusters are there, total?  ",n_clus_tot}~
A:D161: '/xmRecr_Method~
A:E161: '{D}{getnumber "How many clusters will be sampled?  ",n_clus_samp}~
A:E162: '{d 2}{getnumber "What is the SD of cluster mean scores for 5-pt Likert item?  ",sd_clus_5}~
A:E163: '/xmRecr_Method~
A:B166: 'Recr_method
A:D166: ^Mail
A:E166: ^Telephone
A:F166: ^Computer
A:G166: ^Return
A:B167: '    sub-menu:
A:D167: 'Survey mailed to prospects
A:E167: 'Telephone survey of prospects
A:F167: 'Computer-administered survey
A:G167: 'Return to main menu
A:D168: '^M~
A:E168: '^T~
A:F168: '^C~
A:G168: '/xmMenu1~
A:D169: '{d 3}{L 2}
A:E169: '{goto}Tele_Medium~
A:F169: '/xmMenu1~
A:D170: '/xmMail~
A:E170: '/xmTele~
A:B176: 'Samp menu:
A:D176: ^Random
A:E176: ^Stratified
A:F176: ^Cluster
A:G176: ^Return
A:D177: 'Random:  Simple random sampling
A:E177: 'Stratified:  Sampling proportional to size
A:F177: 'Cluster:  Random selection of clusters
A:G177: 'Return to main menu
A:D178: '^R~
A:E178: '^S~
A:F178: '^C~
A:G178: '/xmMenu1~
A:D179: '/xmMenu1~
A:E179: '{goto}N_strata~{U 2}{L 2}
A:F179: '{goto}N_Clus_tot~{L 2}{u 5}
A:E180: '{goto}N_strata~
A:F180: '{goto}N_clus_tot~
A:E181: '{getnumber "How many strata are there, total?  ",N_strata}
A:F181: '{getnumber "How many clusters are there, total?  ",n_clus_tot}~
A:E182: '{D}{getnumber "What is the proportional decrease in item SD within strata?    ",Stratum_SD_decr}~
A:F182: '{D}{getnumber "How many clusters will be sampled?  ",n_clus_samp}~
A:E183: '/xmMenu1~
A:F183: '{d 2}{getnumber "What is the SD of cluster mean scores for 5-pt Likert item?  ",sd_clus_5}~
A:F184: '/xmMenu1~
A:B187: 'Graph menu:
A:D187: ^Y-Axis
A:E187: ^X-Axis
A:F187: ^Iterate
A:G187: 'Graph
A:H187: ^Print
A:I187: ^Return
A:D188: 'Select cost or error as y-variable
A:E188: 'Specify x-variable
A:F188: 'Calculate an additional plot using new parameters
A:G188: 'Display the graph
A:H188: 'Print the current graph
A:I188: 'Return to main menu
A:D189: '{goto}y_axis~
A:E189: '{goto}x_axis~
A:F189: '{goto}Iterate~
A:G189: (F0) '{let graph_name,+"Macro_"&@VLOOKUP(Y_AXIS,GRAPH_TABLE,@HLOOKUP(X_AXIS,X_AXIS_TABLE,1))}~
```

```
A:H189: '/ppicgpq
A:I189: '/xmMenu1~
A:D190: '{u 7}{L 2}
A:E190: '{u 11}{L 2}
A:F190: '{u 16}{L 2}
A:G190: '{dispatch graph_name}
A:H190: '/xmMenu1~
A:D191: '{goto}y_axis~
A:E191: '{goto}x_axis~
A:F191: '{goto}Iterate~
A:D192: '/xmY_menu~
A:E192: '/xmX_menu~
A:F192: '/xmIter_menu~
A:B194: 'y-axis sub-menu
A:D194: ^Cost
A:E194: 'Respondent_Cost
A:F194: ^Error
A:G194: ^Return
A:D195: 'Y-Axis is survey cost
A:E195: 'Y-Axis is cost per survey respondent
A:F195: 'Y-Axis is sampling error (only with X-Axis=N_Surveys at this time)
A:G195: 'Return to Graph menu
A:D196: (F2) '^C~
A:E196: '^R~
A:F196: '{if x_axis="N"}^E~{goto}item_type~/xmError~
A:G196: '{goto}Y_axis~{u 7}{L 2}
A:D197: '{goto}Y_axis~{u 7}{L 2}
A:E197: '{goto}Y_axis~{u 7}{L 2}
A:F197: '^C~{beep}
A:G197: '/xmGraph~
A:D198: '/xmGraph~
A:E198: '/xmGraph~
A:F198: '{goto}Y_axis~
A:F199: '/xmY_menu~
A:B204: 'Error sub-sub-menu
A:D204: '4-Point
A:E204: '5-Point
A:F204: '7-Point
A:G204: 'Yes-No
A:H204: 'Demog
A:I204: ^Return
A:D205: '4-point Likert item
A:E205: '5-point Likert item
A:F205: '7-point LIkert item
A:G205: 'Yes-No (binary) item
A:H205: 'Demographic item
A:I205: 'Return to Graph menu
A:D206: '^4~
A:E206: '^5~
A:F206: '^7~
A:G206: '^Y~
A:H206: '^D~
A:I206: '{u 7}{L 2}
A:D207: '{goto}y_axis~
A:E207: '{goto}y_axis~
A:F207: '{goto}y_axis~
A:G207: '{goto}y_axis~
A:H207: '{goto}y_axis~
A:I207: '/xmGraph~
A:D208: '{u 7}{L 2}
A:E208: '{u 7}{L 2}
A:F208: '{u 7}{L 2}
A:G208: '{u 7}{L 2}
A:H208: '{u 7}{L 2}
A:D209: '/xmGraph~
A:E209: '/xmGraph~
A:F209: '/xmGraph~
A:G209: '/xmGraph~
A:H209: '/xmGraph~
A:B212: 'x-axis sub-menu
A:D212: 'N_Surveys
A:E212: 'Admin_Method
```

```
A:F212: ^Return
A:D213: 'X-Axis is number of respondents
A:E213: 'X-Axis is administration method (only with Y-Axis=Costs at this time)
A:F213: 'Return to Graph menu
A:D214: (F2) '^N~
A:E214: '{if y_axis="E"}^N~{beep}/xmX_menu~
A:F214: '{goto}Y_axis~{u 7}{L 2}
A:D215: '{goto}Y_axis~{u 7}{L 2}
A:E215: (F2) '^A~
A:F215: '/xmGraph~
A:D216: '/xmGraph~
A:E216: '{goto}Y_axis~{u 7}{L 2}
A:E217: '/xmGraph~
A:B224: 'Iterate sub-menu
A:D224: ^Yes
A:E224: ^No
A:F224: ^Return
A:D225: 'Add another data series to the existing graph
A:E225: 'Create a new graph (do not iterate)
A:F225: 'Return to Graph menu
A:D226: '^Y~
A:E226: '^N~
A:F226: '{goto}Y_axis~{u 7}{L 2}
A:B227: '
A:D227: '{goto}Y_axis~{u 7}{L 2}
A:E227: '{goto}Y_axis~{u 7}{L 2}
A:F227: '/xmGraph~
A:D228: '/xmGraph~
A:E228: '/xmGraph~
A:B231: 'File menu:
A:D231: ^Backup_WKS
A:E231: ^Save_Graph
A:F231: ^Return
A:D232: 'Backup this worksheet to a .WK3 file
A:E232: 'Save current graph to a .CGM or .PIC file
A:F232: 'Return to main menu
A:D233: '/fs~b~
A:E233: '/xmSave_Graph~
A:F233: '/xmMenu1~
A:D234: '/xmMenu1~
A:B237: 'Save_Graph menu:
A:D237: ^CGM
A:E237: ^PIC
A:F237: ^Return
A:D238: 'Save graph to a .CGM file
A:E238: 'Save graph to a .PIC file
A:F238: 'Return to file menu
A:D239: '/wgdgM~qq
A:E239: '/wgdgP~qq
A:F239: '/xmFile~
A:D240: '/gs{?}~q
A:E240: '/gs{?}~q
A:D241: '/xmMenu1~
A:E241: '/xmMenu1~
A:B244: 'Quit menu
A:D244: 'Exit
A:E244: 'Quit
A:F244: 'Return
A:D245: 'Clear this spreadsheet and continue 1-2-3
A:E245: 'Quit 1-2-3 without saving this spreadsheet
A:F245: 'Do not end this session
A:D246: '{paneloff}
A:E246: '{paneloff}
A:F246: '/xmMenu1~
A:D247: '/weyy
A:E247: '/wgdobnq
A:E248: '/qyy
```

Level B: Cell Formulas

```
B:I1: [W16] 'ADMIN_DAYS
B:J1: [W0] 'B:C82..B:C82
```

```
B:K1: [W55] 'Days at each group admin site per admin session
B:A2: (L) 'Survey and environmental parameters and costs on this worksheet
B:I2: [W16] 'ADMIN_LOOKUP
B:J2: [W0] 'C:A213..C:D217
B:K2: [W55] 'Table to tie admin method to survey cost
B:A3: (L) \=
B:B3: (L) [W9] \=
B:C3: (L) [W12] \=
B:D3: (L) [W2] \=
B:E3: (L) [W40] \=
B:I3: [W16] 'ADMIN_METHOD
B:J3: [W0] 'B:C223..B:C223
B:K3: [W55] 'Survey admin method: 1=Grp, 2=Mail, 3=Tele, 4=micro
B:I4: [W16] 'ADMIN_SALARY
B:J4: [W0] 'C:A69..C:A69
B:K4: [W55] 'Pay + per diem for group survey admin session
B:A5: (L) 'Number of surveys to be administered (or mailed out):
B:I5: [W16] 'ADMIN_TRAVEL
B:J5: [W0] 'C:A67..C:A67
B:K5: [W55] 'RT transportation to group admin site
B:A6: (L) '  N_Surveys
B:C6: (F0) U [W12] 30000
B:E6: (L) [W40] 'N of completed surveys
B:I6: [W16] 'ALL_OTHER_COSTS
B:J6: [W0] 'B:C183..B:C183
B:I7: [W16] 'ASST_PILOT
B:J7: [W0] 'B:C46..B:C46
B:K7: [W55] 'Rsch. Asst. hours to administer, analyze pilot survey
B:A8: (L) 'N of survey items:
B:C8: (F0) [W12] +N_FIXED+N_MULTR+N_OPEN
B:E8: (L) [W40] 'Total number of items:  N_Fixed+N_MultR+N_Open
B:I8: [W16] 'ASST_RATE
B:J8: [W0] 'B:C144..B:C144
B:K8: [W55] 'Hourly pay rate for research assistants
B:A9: (L) '  N_Fixed
B:C9: (F0) U [W12] 400
B:E9: (L) [W40] 'N fixed-format (multiple choice, yes/no, etc.) items
B:I9: [W16] 'AUTO_MODE
B:J9: [W0] 'D:A322..D:A322
B:A10: (L) '  N_MultR
B:C10: (F0) U [W12] 300
B:E10: (L) [W40] 'N of multiple-response categories
B:I10: [W16] 'AWARD_COST
B:J10: [W0] 'C:B11..C:B11
B:K10: [W55] 'Cost of awarding bids for the project
B:A11: '  N_Open
B:C11: U [W12] 2
B:E11: (L) [W40] 'Total N of open-ended items
B:I11: [W16] 'BIND_BOOKLET
B:J11: [W0] 'B:C72..B:C72
B:K11: [W55] 'Cost of stapling/binding 1 paper-pencil booklet
B:A12: (L) '    N_Open_Typed
B:C12: (F0) U [W12] 0
B:E12: (L) [W40] 'N of open-ended to be typed verbatim
B:I12: [W16] 'BOOKLET_SCAN
B:J12: [W0] 'B:C66..B:C66
B:K12: [W55] 'Cost of scanning one survey booklet
B:A13: (L) '    N_Open_Coded
B:C13: (F0) U [W12] 2
B:E13: (L) [W40] 'N of open-ended items to be coded
B:I13: [W16] 'BRE
B:J13: [W0] 'B:C164..B:C164
B:K13: [W55] 'Cost of BRE to return mail survey
B:A14: (L) '    N_Rel_Items
B:C14: (F0) U [W12] 1
B:E14: (L) [W40] 'N of open-ended items to be coded twice to check coder reliability
B:I14: [W16] 'BRE_FOR_RETURN
B:J14: [W0] 'C:B134..C:B134
B:K14: [W55] 'Return mail survey by BRE (=1) or SASE (=0)?
B:I15: [W16] 'BULK_FED_EX
B:J15: [W0] 'B:C161..B:C161
B:K15: [W55] 'Cost of overnight shipping a package
```

```
B:I16: [W16] 'CAR_RENTAL
B:J16: [W0] 'B:C153..B:C153
B:K16: [W55] 'Daily rate for rental of automobile
B:A17: (L) 'Hours and costs related to survey project management:
B:I17: [W16] 'CLERICAL_RATE
B:J17: [W0] 'B:C147..B:C147
B:K17: [W55] 'Hourly rate for clerical workers
B:A18: '  Sampl_Decision
B:C18: (F2) U [W12] 6
B:E18: [W40] 'Professional hours to determine sampling plan
B:I18: [W16] 'CODE_BOOK_ITEM
B:J18: [W0] 'B:C137..B:C137
B:K18: [W55] 'Cost to create code book for one survey item
B:A19: '  Sampl_Practical
B:C19: (F2) U [W12] 10
B:E19: [W40] 'Professional hours to implement sampling plan
B:I19: [W16] 'COLOR_COST
B:J19: [W0] 'B:C56..B:C56
B:K19: [W55] 'Cost of adding color to scannable booklet
B:I20: [W16] 'COMP_ADM_COST
B:J20: [W0] 'C:B83..C:B83
B:K20: [W55] 'Cost of administering survey on microcomputer
B:A21: '  Write_RFP
B:C21: (F2) U [W12] 12
B:E21: (C2) [W40] 'Profesional hours to write proposal
B:I21: [W16] 'COMP_PUBL_COST
B:J21: [W0] 'C:B52..C:B52
B:K21: [W55] 'Cost of publishing microcomputer admin. survey
B:A22: '  Type_RFP
B:C22: (F2) U [W12] 6
B:E22: (C2) [W40] 'Secretary hours to type/copy proposal
B:I22: [W16] 'COMP_TOTAL
B:J22: [W0] 'C:B240..C:B240
B:K22: [W55] 'Total cost for microcomputer-administered survey
B:A23: '  Publish_RFP
B:C23: (F2) U [W12] 3
B:E23: (C2) [W40] 'Secretary hours to publish the proposal
B:I23: [W16] 'CONTENT_TIME
B:J23: [W0] 'B:C43..B:C43
B:K23: [W55] 'Professional hours to determine content, N items
B:A24: '  Misc_RFP
B:C24: (F2) U [W12] 8
B:E24: (C2) [W40] 'Hours to answer bidder questions, etc.
B:I24: [W16] 'COSTS_AND_LABOR
B:J24: [W0] 'A:D92..A:D92
B:I25: [W16] 'COST_ADM
B:J25: [W0] 'E:B13..E:C16
B:A26: '  Process_bids
B:C26: (F2) U [W12] 7
B:E26: (C2) [W40] 'Secretary hours to handle bids
B:I26: [W16] 'COST_DISKETTE
B:J26: [W0] 'B:C178..B:C178
B:K26: [W55] 'Cost of microcomputer diskette
B:A27: '  Evaluate_bids
B:C27: (F2) U [W12] 8
B:E27: [W40] 'Professional hours to evaluate bids
B:I27: [W16] 'COST_N
B:J27: [W0] 'E:B27..E:D32
B:I28: [W16] 'COST_PER_PERSON
B:J28: [W0] 'C:B211..C:B211
B:K28: [W55] 'Total survey cost per survey sent
B:A29: '  Deliv_Secty
B:C29: (F2) U [W12] 20
B:E29: (C2) [W40] 'Secretary hours to receive/process deliverables
B:I29: [W16] 'COVER_LTR_HRS
B:J29: [W0] 'B:C106..B:C106
B:K29: [W55] 'Hours professional time to write cover letter
B:A30: '  Deliv_Prof
B:C30: (F2) U [W12] 10
B:E30: (C2) [W40] 'Professional hours to receive/process deliverables
B:I30: [W16] 'CREATE_CODE_BK
B:J30: [W0] 'C:B202..C:B202
```

```
B:K30: [W55] 'Cost of creating code book for full survey
B:A31: '  Info_Secty
B:C31: (F2) U [W12] 20
B:E31: [W40] 'Secretary hours to publish/disseminate project info.
B:I31: [W16] 'CREATE_OTHER
B:J31: [W0] 'B:C52..B:C52
B:A32: '  Info_Prof
B:C32: (F2) U [W12] 10
B:E32: [W40] 'Professional hours to publish/disseminate project info
B:I32: [W16] 'CREA_COST
B:J32: [W0] 'C:B23..C:B23
B:K32: [W55] 'Cost of creating survey (design/pilot/revise)
B:I33: [W16] 'CREA_ITEM_COST
B:J33: [W0] 'C:B28..C:B28
B:K33: [W55] 'Cost per item of creating survey
B:A34: (L) '  Data_Anal_Hrs
B:C34: (F2) U [W12] 30
B:E34: (L) [W40] 'Programmer hours for survey data analysis
B:I34: [W16] 'DAILY_ADM_RATE
B:J34: [W0] 'B:C84..B:C84
B:K34: [W55] 'Daily pay rate for each group administrator
B:I35: [W16] 'DATA_ANALYSIS
B:J35: [W0] 'C:B15..C:B15
B:A36: (L) '  Final_Secty
B:C36: (F2) U [W12] 45
B:E36: (L) [W40] 'Secretary hours to type final report
B:I36: [W16] 'DATA_ANAL_HRS
B:J36: [W0] 'B:C34..B:C34
B:A37: (L) '  Final_Prof
B:C37: (F2) U [W12] 50
B:E37: (L) [W40] 'Prof. hours to write final report
B:I37: [W16] 'DATA_CAPTURE
B:J37: [W0] 'C:B154..C:B154
B:I38: [W16] 'DELIVERABLES
B:J38: [W0] 'C:B13..C:B13
B:K38: [W55] 'Cost of receiving/processing deliverables
B:A39: '  Mgmt_Other
B:C39: (C2) U [W12] 25
B:E39: [W40] 'Other expenses relating to project management
B:I39: [W16] 'DELIV_PROF
B:J39: [W0] 'B:C30..B:C30
B:K39: [W55] 'Professional time to receive/process deliverables
B:I40: [W16] 'DELIV_SECTY
B:J40: [W0] 'B:C29..B:C29
B:K40: [W55] 'Secretary time to receive/process deliverables
B:I41: [W16] 'DESIGN_COST
B:J41: [W0] 'C:B24..C:B24
B:K41: [W55] 'Cost of designing initial survey
B:A42: (L) 'Hours needed for survey creation:
B:I42: [W16] 'DISK_COPY_HRS
B:J42: [W0] 'B:C99..B:C99
B:K42: [W55] 'Programmer hrs: copy computer-admin. survey to diskette
B:A43: (L) '  Content_Time
B:C43: (F2) U [W12] 3
B:E43: (L) [W40] 'Prof. hours to determine survey content
B:I43: [W16] 'DISK_DATA_MERGE
B:J43: [W0] 'B:C102..B:C102
B:K43: [W55] 'Cost of managing data set for computer-admin survey
B:A44: (L) '  Item_Time
B:C44: (F2) U [W12] 8
B:E44: (L) [W40] 'Prof. hours to write survey items
B:I44: [W16] 'DISK_MAILER
B:J44: [W0] 'B:C175..B:C175
B:K44: [W55] 'Cost of mailer for microcomputer diskette
B:A45: (L) '  Secty_Design
B:C45: (F2) U [W12] 10
B:E45: (L) [W40] 'Secretary hours to create survey drafts
B:I45: [W16] 'EACH_KEYP_BOOK
B:J45: [W0] 'C:B45..C:B45
B:A46: (L) '  Asst_Pilot
B:C46: (F2) U [W12] 30
B:E46: (L) [W40] 'Rsch. Asst. hours to administer, analyze pilot survey
```

```
B:I46: [W16] 'EACH_SCAN_BOOK
B:J46: [W0] 'C:B37..C:B37
B:A47: (L) '  Secty_Pilot
B:C47: (F2) U [W12] 24
B:E47: (L) [W40] 'Secretary hours for pilot test of survey
B:I47: [W16] 'ENV_#10
B:J47: [W0] 'B:C170..B:C170
B:K47: [W55] 'Cost of #10 envelope
B:A48: (L) '  Prof_Pilot
B:C48: (F2) U [W12] 24
B:E48: (L) [W40] 'Prof. hours for pilot test of survey
B:I48: [W16] 'ENV_9X12
B:J48: [W0] 'B:C172..B:C172
B:K48: [W55] 'Cost of 9"x12" envelope
B:A49: (L) '  Secty_Revise
B:C49: (F2) U [W12] 6
B:E49: (L) [W40] 'Secretary hours to revise survey after pilot
B:I49: [W16] 'ENV_PER_HR
B:J49: [W0] 'B:C109..B:C109
B:A50: (L) '  Prof_Revise
B:C50: (F2) U [W12] 4
B:E50: (L) [W40] 'Prof. Hours to revise survey after pilot
B:I50: [W16] 'ERROR
B:J50: [W0] 'A:D179..A:D179
B:I51: [W16] 'ERROR_N
B:J51: [W0] 'E:B44..E:C49
B:A52: (L) '  Create_Other
B:C52: (C2) U [W12] 50
B:E52: (L) [W40] 'Other expenses relating to survey creation
B:I52: [W16] 'EVALUATE_BIDS
B:J52: [W0] 'B:C27..B:C27
B:K52: [W55] 'Professional hours to evaluate bids
B:I53: [W16] 'EXPL_HRS
B:J53: [W0] 'B:C94..B:C94
B:A54: (L) 'Scannable booklet publication costs:
B:I54: [W16] 'FED_EX
B:J54: [W0] 'B:C160..B:C160
B:K54: [W55] 'Cost of overnight priority letter
B:A55: (L) '  Mockup_Cost
B:C55: (C2) U [W12] 500
B:E55: (L) [W40] 'Cost of booklet mockup
B:I55: [W16] 'FILE
B:J55: [W0] 'A:D206..A:D206
B:A56: (L) '  Color_Cost
B:C56: (C2) U [W12] 500
B:E56: (L) [W40] 'Cost of adding color to booklet
B:I56: [W16] 'FINAL_PROF
B:J56: [W0] 'B:C37..B:C37
B:A57: (L) '  Litho_Cost
B:C57: (C2) U [W12] 500
B:E57: (L) [W40] 'Cost of adding litho codes to scannable booklet
B:I57: [W16] 'FINAL_REPORT
B:J57: [W0] 'C:B16..C:B16
B:A58: (L) '  Type_Cost
B:C58: (C2) U [W12] 2500
B:E58: (L) [W40] 'Cost of typesetting scannable booklet
B:I58: [W16] 'FINAL_SECTY
B:J58: [W0] 'B:C36..B:C36
B:A59: (L) '  Print_Cost
B:C59: (C2) U [W12] 1
B:E59: (L) [W40] 'Per-booklet cost of printing
B:I59: [W16] 'FIRST_CLASS
B:J59: [W0] 'B:C158..B:C158
B:K59: [W55] 'Postage for first class letter
B:I60: [W16] 'GRAPH
B:J60: [W0] 'A:D162..A:D162
B:A61: (L) '  Scan_Bk_Other
B:C61: (C2) U [W12] 70
B:E61: (L) [W40] 'Other costs for printing scannable booklets
B:I61: [W16] 'GRAPH_NAME
B:J61: [W0] 'B:C303..B:C303
B:I62: [W16] 'GRAPH_TABLE
```

```
B:J62: [W0] 'B:B300..B:D301
B:I63: [W16] 'GROUP_ADM_COST
B:J63: [W0] 'C:B74..C:B74
B:K63: [W55] 'Cost of group administering survey project
B:A64: (L) 'Scannable booklet data capture costs:
B:I64: [W16] 'GROUP_TOTAL
B:J64: [W0] 'C:B219..C:B219
B:K64: [W55] 'Total cost for group-administered survey
B:A65: (L) '  Scan_program
B:C65: (C2) U [W12] 50
B:E65: (L) [W40] 'Cost of programming scanner for the survey
B:I65: [W16] 'HOURLY_LONG_D
B:J65: [W0] 'B:C123..B:C123
B:K65: [W55] 'Long distance or WATS cost per hour
B:A66: (L) '  Booklet_Scan
B:C66: (C2) U [W12] 0.1
B:E66: (L) [W40] 'Cost of scanning one survey booklet
B:I66: [W16] 'HOURS_TO_TRAIN
B:J66: [W0] 'B:C81..B:C81
B:K66: [W55] 'N hours needed to train a group survey administrator
B:I67: [W16] 'HRS_PER_SURVEY
B:J67: [W0] 'B:C125..B:C125
B:I68: [W16] 'HRS_TRAIN_RECR
B:J68: [W0] 'B:C97..B:C97
B:K68: [W55] 'Hours to train recruiter to administer computer survey
B:A69: (L) 'Paper-and-Pencil survey publication costs:
B:I69: [W16] 'HRS_TRAIN_TELE
B:J69: [W0] 'B:C124..B:C124
B:K69: [W55] 'Hours needed to train telephone interviewers
B:A70: (L) '  Keyp_Type_Hrs
B:C70: (F2) U [W12] 0.7
B:E70: (L) [W40] 'Hrs.for sec'ty to type 1 page of survey
B:I70: [W16] 'INCENTIVE
B:J70: [W0] 'B:C179..B:C179
B:K70: [W55] 'Cost of incentive for mail survey respondent
B:A71: (L) '  Keyp_Print
B:C71: (C2) U [W12] 0.09
B:E71: (L) [W40] 'Cost to print 1 page of survey booklet
B:I71: [W16] 'INFO_PROF
B:J71: [W0] 'B:C32..B:C32
B:K71: [W55] 'Professional hours to disseminate project info
B:A72: (L) '  Bind_Booklet
B:C72: (C2) U [W12] 0.35
B:E72: (L) [W40] 'Cost of stapling/binding survey booklet
B:I72: [W16] 'INFO_PUBLISH
B:J72: [W0] 'C:B14..C:B14
B:K72: [W55] 'Cost of publishing project info/results
B:I73: [W16] 'INFO_SECTY
B:J73: [W0] 'B:C31..B:C31
B:K73: [W55] 'Secretary time to disseminate project info
B:I74: [W16] 'INSTR_BK_MISC
B:J74: [W0] 'B:C91..B:C91
B:A75: (L) 'Paper-and-Pencil survey data capture costs:
B:I75: [W16] 'INSTR_BOOK_HRS
B:J75: [W0] 'B:C90..B:C90
B:K75: [W55] 'Prof. time to write computer-admin manual
B:A76: (L) '  Keyp_Program
B:C76: (C2) U [W12] 60
B:E76: (L) [W40] 'Cost of creating data entry program
B:I76: [W16] 'ITEM_CODE
B:J76: [W0] 'B:C135..B:C135
B:K76: [W55] 'Cost of coding one open-ended item on one survey
B:A77: (L) '  Item_Key_Cost
B:C77: (C4) U [W12] 0.0045
B:E77: (L) [W40] 'Per-item cost for data entry
B:I77: [W16] 'ITEM_KEY_COST
B:J77: [W0] 'B:C77..B:C77
B:K77: [W55] 'Per-item cost for data entry
B:I78: [W16] 'ITEM_SD
B:J78: [W0] 'E:B57..E:E61
B:I79: [W16] 'ITEM_TIME
B:J79: [W0] 'B:C44..B:C44
```

```
B:K79: [W55] 'Professional hours to create items
B:A80: (L) 'Group Survey Administration:  Parameters and Costs
B:I80: [W16] 'ITEM_TYPE
B:J80: [W0] 'B:C286..B:C286
B:A81: (L) '  Hours_to_Train
B:C81: (F2) U [W12] 2
B:E81: (L) [W40] 'N of hours to train administrators
B:I81: [W16] 'ITERATE
B:J81: [W0] 'B:C291..B:C291
B:A82: (L) '  Admin_Days
B:C82: (F2) U [W12] 5
B:E82: (L) [W40] 'N of days at each site to administer the survey
B:I82: [W16] 'ITERATE_COST_N
B:J82: [W0] 'D:B18..D:B18
B:A83: (L) '  N_Admins
B:C83: (F0) U [W12] 24
B:E83: (L) [W40] 'N of sites at which survey will be administered
B:I83: [W16] 'ITER_COST_ADM
B:J83: [W0] 'D:B74..D:B74
B:A84: (L) '  Daily_Adm_Rate
B:C84: (C2) U [W12] 100
B:E84: (L) [W40] 'Daily pay rate for each survey administrtor
B:I84: [W16] 'ITER_ERROR_N
B:J84: [W0] 'D:B116..D:B116
B:A85: (L) '  N_Administr
B:C85: (F0) U [W12] 3
B:E85: (L) [W40] 'N administrators at each group admin site
B:I85: [W16] 'ITER_MENU
B:J85: [W0] 'A:D199..A:D199
B:I86: [W16] 'KEYP_BOOK_COST
B:J86: [W0] 'C:B39..C:B39
B:I87: [W16] 'KEYP_CAPTURE
B:J87: [W0] 'C:B181..C:B181
B:K87: [W55] 'Data capture costs for paper-and-pencil survey
B:A88: (L) 'Computer-Administered Survey Publication:
B:I88: [W16] 'KEYP_PRINT
B:J88: [W0] 'B:C71..B:C71
B:K88: [W55] 'Cost to print 1 page in paper-pencil booklet
B:A89: (L) '  PC_Itms_per_Hr
B:C89: (F0) U [W12] 15
B:E89: (L) [W40] 'Items per hour for programming PC data capture software
B:I89: [W16] 'KEYP_PROGRAM
B:J89: [W0] 'B:C76..B:C76
B:K89: [W55] 'Cost of creating data entry program
B:A90: (L) '  Instr_Book_Hrs
B:C90: (F2) U [W12] 4
B:E90: (L) [W40] 'Hours to write brief instruction manual
B:I90: [W16] 'KEYP_TYPE_HRS
B:J90: [W0] 'B:C70..B:C70
B:K90: [W55] 'Hours to type 1 page of paper-pencil booklet
B:A91: (L) '  Instr_Bk_Misc
B:C91: (C2) U [W12] 10
B:E91: (L) [W40] 'Misc. per-copy costs to print instruction manual
B:I91: [W16] 'LEGEND_COST_ADM
B:J91: [W0] 'E:C18..E:C18
B:I92: [W16] 'LEGEND_COST_N
B:J92: [W0] 'E:C34..E:C34
B:A93: (L) 'Computer Survey Administration:  Parameters and Costs
B:I93: [W16] 'LEGEND_ERROR_N
B:J93: [W0] 'E:C51..E:C51
B:A94: (L) '  Expl_Hrs
B:C94: (F2) U [W12] 0.15
B:E94: (L) [W40] 'Hours to explain survey to each respondent
B:I94: [W16] 'LETTERHEAD
B:J94: [W0] 'B:C171..B:C171
B:K94: [W55] 'Cost of one sheet letterhead paper
B:A95: (L) '  N_Months
B:C95: (F0) U [W12] 12
B:E95: (L) [W40] 'N months during which survey will be administered
B:I95: [W16] 'LITHO_COST
B:J95: [W0] 'B:C57..B:C57
B:K95: [W55] 'Cost of adding litho codes to scannable booklets
```

```
B:A96: (L) '  N_Stations
B:C96: (F0) U [W12] 250
B:E96: (L) [W40] 'N of stations at which survey will be administered
B:I96: [W16] 'MACRO_COST_ADM
B:J96: [W0] 'D:A68..D:A68
B:A97: (L) '  Hrs_Train_Recr
B:C97: (F2) U [W12] 12
B:E97: (L) [W40] 'Hours needed to train all administrators
B:I97: [W16] 'MACRO_COST_N
B:J97: [W0] 'D:A10..D:A10
B:A98: (L) '  N_Recruiter
B:C98: (F0) U [W12] 500
B:E98: (L) [W40] 'N recruiters to be administering the survey
B:I98: [W16] 'MACRO_ERROR_N
B:J98: [W0] 'D:A114..D:A114
B:A99: (L) '  Disk_Copy_Hrs
B:C99: (F2) U [W12] 0.15
B:E99: (L) [W40] 'Programmer time to copy survey program to each diskette
B:I99: [W16] 'MAG_TAPE
B:J99: [W0] 'B:C180..B:C180
B:K99: [W55] 'Cost of computer magnetic tape
B:I100: [W16] 'MAIL
B:J100: [W0] 'A:D105..A:D105
B:A101: (L) 'Computer-administered survey:  Data capture costs:
B:I101: [W16] 'MAIL_ADM_COST
B:J101: [W0] 'C:B101..C:B101
B:K101: [W55] 'Cost of mail administration of surveys
B:A102: (L) '  Disk_Data_Merge
B:C102: (C2) U [W12] 200
B:E102: (L) [W40] 'Cost to manage diskettes for computer-admin survey
B:I102: [W16] 'MAIL_BOOKLET
B:J102: [W0] 'B:C230..B:C230
B:I103: [W16] 'MAIL_LIST
B:J103: [W0] 'B:C108..B:C108
B:K103: [W55] 'Total cost for mailing list
B:I104: [W16] 'MAIL_RESP_RATE
B:J104: [W0] 'B:C114..B:C114
B:K104: [W55] 'Final mail survey response rate
B:A105: (L) 'Mail Survey Administration:  Parameters and Costs
B:I105: [W16] 'MAIL_TOTAL
B:J105: [W0] 'C:B226..C:B226
B:K105: [W55] 'Total cost of mail-administered survey
B:A106: (L) '  Cover_ltr_Hrs
B:C106: (F2) U [W12] 1.2
B:E106: (L) [W40] 'Hours to write the cover letter(s)
B:I106: [W16] 'MENU1
B:J106: [W0] 'A:D54..A:D54
B:A107: (L) '  Write_Card_Hrs
B:C107: (F2) U [W12] 0.7
B:E107: (L) [W40] 'Hours to write the follow-up card(s)
B:I107: [W16] 'METHOD
B:J107: [W0] 'A:D98..A:D98
B:A108: (L) '  Mail_List
B:C108: (C2) U [W12] 400
B:E108: (L) [W40] 'Cost to purchase/create mailing list
B:I108: [W16] 'MGMT_COST
B:J108: [W0] 'C:B8..C:B8
B:K108: [W55] 'Overall cost of survey project management
B:A109: (L) '  Env_per_Hr
B:C109: (F0) U [W12] 30
B:E109: (L) [W40] 'N of envelopes addressed per hour
B:I109: [W16] 'MGMT_OTHER
B:J109: [W0] 'B:C39..B:C39
B:K109: [W55] 'Cost of other project management expenses
B:A110: (L) '  Stuffed_per_hr
B:C110: (F0) U [W12] 40
B:E110: (L) [W40] 'N of envelopes stuffed per hour
B:I110: [W16] 'MICRO_CAPTURE
B:J110: [W0] 'C:B199..C:B199
B:K110: [W55] 'Cost of data capture for microcomputer-admin. survey
B:A111: (L) '  Resp_Rate_1
B:C111: (F2) U [W12] 0.2
```

```
B:E111: (L) [W40] 'Resp.Rate before sending follow-up card
B:I111: [W16] 'MISC_RFP
B:J111: [W0] 'B:C24..B:C24
B:K111: [W55] 'Secretary hours to answer bidder questions, etc.
B:A112: (L) '  Resp_Rate_2
B:C112: (F2) U [W12] 0.4
B:E112: (L) [W40] 'Resp.Rate before sending 2nd survey packet
B:I112: [W16] 'MOCKUP_COST
B:J112: [W0] 'B:C55..B:C55
B:K112: [W55] 'Cost of scannable booklet mock-up
B:A113: (L) '  Resp_Rate_3
B:C113: (F2) U [W12] 0.5
B:E113: (L) [W40] 'Resp.Rate before final follow-up letter
B:I113: [W16] 'MODE
B:J113: [W0] 'A:D62..A:D62
B:A114: (L) '  Mail_Resp_Rate
B:C114: (F2) U [W12] 0.6
B:E114: (L) [W40] 'Overall mail survey response rate
B:I114: [W16] 'N_ADMINISTR
B:J114: [W0] 'B:C85..B:C85
B:K114: [W55] 'N of administrators at each group admin site
B:I115: [W16] 'N_ADMINS
B:J115: [W0] 'B:C83..B:C83
B:K115: [W55] 'N of group survey administration sessions
B:I116: [W16] 'N_CHOICE
B:J116: [W0] 'B:C9..B:C9
B:K116: [W55] 'N multiple-choice items
B:A117: (L) 'Telephone survey publication:  Parameters and costs:
B:I117: [W16] 'N_CLUS_SAMP
B:J117: [W0] 'B:C192..B:C192
B:A118: (L) '  N_Interv
B:C118: (F0) U [W12] 20
B:E118: (L) [W40] 'N interviewers to be involved in survey
B:I118: [W16] 'N_CLUS_TOT
B:J118: [W0] 'B:C191..B:C191
B:A119: (L) '  Tel_Item_per_Hr
B:C119: (F0) U [W12] 6
B:E119: (L) [W40] 'Items per hour programmed into tele survey software
B:I119: [W16] 'N_FIXED
B:J119: [W0] 'B:C9..B:C9
B:I120: [W16] 'N_INTERV
B:J120: [W0] 'B:C118..B:C118
B:K120: [W55] 'N of telephone survey interviewers to train
B:I121: [W16] 'N_ITEMS
B:J121: [W0] 'B:C8..B:C8
B:K121: [W55] 'Total N of survey items
B:A122: (L) 'Telephone survey administration:  Parameters and costs
B:I122: [W16] 'N_KEYP_PAGES
B:J122: [W0] 'C:B40..C:B40
B:K122: [W55] 'N pages needed for paper-pencil booklet
B:A123: (L) '  Hourly_Long_D
B:C123: (C2) U [W12] 20
B:E123: (L) [W40] 'Long distance/WATS rate for 1 hour
B:I123: [W16] 'N_MAIL_SENT
B:J123: [W0] 'C:A88..C:A88
B:A124: (L) '  Hrs_Train_Tele
B:C124: (F2) U [W12] 1.5
B:E124: (L) [W40] 'Hrs. needed to train an interviewer
B:I124: [W16] 'N_MONTHS
B:J124: [W0] 'B:C95..B:C95
B:K124: [W55] 'Months duration for computer admin. survey
B:A125: (L) '  Hrs_per_survey
B:C125: (F2) U [W12] 0.6
B:E125: (L) [W40] 'Hours (incl. dialing, etc.) to complete one survey
B:I125: [W16] 'N_MULTR
B:J125: [W0] 'B:C10..B:C10
B:K125: [W55] 'N of multiple-response categories
B:A126: (L) '  Phone_List
B:C126: (C2) U [W12] 400
B:E126: (L) [W40] 'Cost to purchase/create telephone list
B:I126: [W16] 'N_OPEN
B:J126: [W0] 'B:C11..B:C11
```

```
B:K126: [W55] 'Total N open-ended items
B:A127: (L) '
B:C127: (F0) U [W12] '
B:I127: [W16] 'N_OPEN_CODED
B:J127: [W0] 'B:C13..B:C13
B:K127: [W55] 'N open-ended items that will be coded
B:I128: [W16] 'N_OPEN_TYPED
B:J128: [W0] 'B:C12..B:C12
B:K128: [W55] 'N open-ended items that will be transcribed verbatim
B:A129: (L) 'Online telephone survey:  Data capture costs
B:I129: [W16] 'N_PER_CLUS
B:J129: [W0] 'B:C193..B:C193
B:A130: (L) '  Tele_Data_Merge
B:C130: (C2) U [W12] 100
B:E130: (L) [W40] 'Cost of managing online tele. survey data
B:I130: [W16] 'N_RECRUITER
B:J130: [W0] 'B:C98..B:C98
B:K130: [W55] 'N recruiters trained for computer survey administration
B:I131: [W16] 'N_REL_ITEMS
B:J131: [W0] 'B:C14..B:C14
B:K131: [W55] 'N open-ended items coded twice for rater reliability check
B:I132: [W16] 'N_SCAN_PAGES
B:J132: [W0] 'C:B35..C:B35
B:K132: [W55] 'N pages for scannable booklet (mult of 4)
B:A133: (L) 'Miscellaneous data capture costs:
B:I133: [W16] 'N_STATIONS
B:J133: [W0] 'B:C96..B:C96
B:K133: [W55] 'N locations for computer-admin surveys
B:A134: (L) '  Write_Tape
B:C134: (C2) U [W12] 40
B:E134: (L) [W40] 'Cost to write data to mag.tape
B:I134: [W16] 'N_STRATA
B:J134: [W0] 'B:C188..B:C188
B:A135: (L) '  Item_Code
B:C135: (C2) U [W12] 0.2
B:E135: (L) [W40] 'Cost to code 1 open-ended item on 1 survey
B:I135: [W16] 'N_SURVEYS
B:J135: [W0] 'B:C6..B:C6
B:K135: [W55] 'Total N of surveys completed
B:A136: (L) '  Type_Open_Ended
B:C136: (C2) U [W12] 0.5
B:E136: (L) [W40] 'Cost to transcribe 1 open-ended on 1 survey
B:I136: [W16] 'OHD_ADMINISTER
B:J136: [W0] 'B:C212..B:C212
B:A137: (L) '  Code_Book_Item
B:C137: (C2) U [W12] 5
B:E137: (L) [W40] 'Cost to create code book for 1 item
B:I137: [W16] 'OHD_CREATION
B:J137: [W0] 'B:C210..B:C210
B:I138: [W16] 'OHD_DATA
B:J138: [W0] 'B:C213..B:C213
B:I139: [W16] 'OHD_MANAGEMENT
B:J139: [W0] 'B:C209..B:C209
B:A140: (L) 'Hourly Salaries and Pay Rates:
B:I140: [W16] 'OHD_PUBLISH
B:J140: [W0] 'B:C211..B:C211
B:A141: (L) '  Programmer_Rate
B:C141: (C2) U [W12] 16
B:E141: (L) [W40] 'Hourly rate for computer programmer
B:I141: [W16] 'ONGOING_COST
B:J141: [W0] 'C:B12..C:B12
B:K141: [W55] 'Cost of receiving/disseminating project info.
B:A142: (L) '  Prof_Rate
B:C142: (C2) U [W12] 25
B:E142: (L) [W40] 'Hourly rate for professional consultant
B:I142: [W16] 'ONLINE
B:J142: [W0] 'C:B149..C:B149
B:K142: [W55] 'Is telephone survey using online data capture?
B:A143: (L) '  Secty_Rate
B:C143: (C2) U [W12] 9.5
B:E143: (L) [W40] 'Hourly rate for secretaries
B:I143: [W16] 'ONLINE_DATA
```

```
B:J143: [W0] 'C:B150..C:B150
B:K143: [W55] 'Cost of shipping online data to project manager
B:A144: (L) '  Asst_Rate
B:C144: (C2) U [W12] 12
B:E144: (L) [W40] 'Hourly rate for Research Assistants
B:I144: [W16] 'ONL_SCAN_PAPER
B:J144: [W0] '
B:K144: [W55] 'Is tele survey online (=1), scannable (=0), or paper-pencil(=0)?
B:A145: (L) '  Recr_Rate
B:C145: (C2) U [W12] 14
B:E145: (L) [W40] 'Hourly rate for Army Recruiters (administer computer survey)
B:I145: [W16] 'OTHER_COSTS
B:J145: [W0] 'D:A307..D:A307
B:A146: (L) '  Telemkt_Rate
B:C146: (C2) U [W12] 7
B:E146: (L) [W40] 'Hourly rate for telemarketers
B:I146: [W16] 'PACKET_BRE
B:J146: [W0] 'C:B122..C:B122
B:A147: (L) '  Clerical_Rate
B:C147: (C2) U [W12] 6.5
B:E147: (L) [W40] 'Hourly rate for clerical workers
B:I147: [W16] 'PACKET_SASE
B:J147: [W0] 'C:B113..C:B113
B:I148: [W16] 'PAGE_PRINT_COST
B:J148: [W0] 'B:C174..B:C174
B:K148: [W55] 'Cost of printing on letterhead paper
B:I149: [W16] 'PAPER_PENCIL
B:J149: [W0] 'C:B131..C:B131
B:K149: [W55] 'Is the survey paper-and-pencil (=1) or scannable?
B:A150: (L) 'Travel Expenses:
B:I150: [W16] 'PARAM
B:J150: [W0] 'A:D75..A:D75
B:A151: (L) '  Per_Diem
B:C151: (C2) U [W12] 65
B:E151: (L) [W40] 'Allowable per diem expense
B:I151: [W16] 'PC_ITMS_PER_HR
B:J151: [W0] 'B:C89..B:C89
B:A152: (L) '  Site_Travel
B:C152: (C2) U [W12] 0
B:E152: (L) [W40] 'Cost of R.T. travel to survey admin site
B:I152: [W16] 'PC_PROGR_TIME
B:J152: [W0] 'C:B53..C:B53
B:K152: [W55] 'Hours to program survey into telemkt. data software
B:A153: (L) '  Car_Rental
B:C153: (C2) U [W12] 60
B:E153: (L) [W40] 'Daily car rental rate (for all auto costs)
B:I153: [W16] 'PER_DIEM
B:J153: [W0] 'B:C151..B:C151
B:K153: [W55] 'Per diem rate for travel expenses
B:A154: (L) '  Tele_Travel
B:C154: (C2) U [W12] 600
B:E154: (L) [W40] 'R.T. travel costs for trainer of tele. interviewers
B:I154: [W16] 'PHONE_LIST
B:J154: [W0] 'B:C126..B:C126
B:K154: [W55] 'Cost of purchasing/creating telephone list
B:I155: [W16] 'PILOT_COST
B:J155: [W0] 'C:B25..C:B25
B:K155: [W55] 'Cost of pilot-testing survey
B:I156: [W16] 'POSTAGE
B:J156: [W0] 'D:A264..D:A264
B:A157: (L) 'Postage and shipping:
B:I157: [W16] 'POST_CARD
B:J157: [W0] 'B:C159..B:C159
B:K157: [W55] 'Postage for post card
B:A158: '  First_Class
B:C158: (C2) U [W12] 0.29
B:E158: (L) [W40] 'Cost of first-class letter postage
B:I158: [W16] 'PRINT_BOOKLET
B:J158: [W0] 'C:B43..C:B43
B:K158: [W55] 'Cost of printing 1 paper-pencil survey booklet
B:A159: '  Post_Card
B:C159: (C2) U [W12] 0.19
```

```
B:E159: (L) [W40] 'Cost of postage for post card
B:I159: [W16] 'PRINT_CARD
B:J159: [W0] 'B:C173..B:C173
B:K159: [W55] 'Cost of print post card
B:A160: '  Fed_Ex
B:C160: (C2) U [W12] 9.95
B:E160: (L) [W40] 'Cost of overnight priority letter
B:I160: [W16] 'PRINT_COST
B:J160: [W0] 'B:C59..B:C59
B:K160: [W55] 'Cost of printing one scannable booklet
B:A161: (L) '  Bulk_Fed_Ex
B:C161: (C2) U [W12] 20
B:E161: (L) [W40] 'Cost of overnight shipping a package
B:I161: [W16] 'PROCESS_BIDS
B:J161: [W0] 'B:C26..B:C26
B:K161: [W55] 'Secretary hours to process bids
B:A162: (L) '  Survey_Postage
B:C162: (C2) U [W12] 0.98
B:E162: (L) [W40] 'Postage cost to mail survey packet
B:I162: [W16] 'PROF_PILOT
B:J162: [W0] 'B:C48..B:C48
B:K162: [W55] 'Professional hours for pilot test
B:A163: (L) '  SASE
B:C163: (C2) U [W12] 0.98
B:E163: (L) [W40] 'Postage cost for survey SASE
B:I163: [W16] 'PROF_RATE
B:J163: [W0] 'B:C142..B:C142
B:K163: [W55] 'Hourly pay rate for professional consultant
B:A164: '  BRE
B:C164: (C2) U [W12] 1.4
B:E164: (L) [W40] 'Postage cost for survey BRE
B:I164: [W16] 'PROF_REVISE
B:J164: [W0] 'B:C50..B:C50
B:K164: [W55] 'Professional hours to revise after pilot survey
B:A165: '  Ship_to_site
B:C165: (C2) U [W12] 100
B:E165: (L) [W40] 'Cost to bulk ship surveys to admin site
B:I165: [W16] 'PROGRAMMER_RATE
B:J165: [W0] 'B:C141..B:C141
B:K165: [W55] 'Hourly pay rate for computer programmer
B:A166: '  Ship_from_site
B:C166: (C2) U [W12] 100
B:E166: (L) [W40] 'Cost to bulk ship unused surveys to project mgr.
B:I166: [W16] 'PROPN_DEMOG
B:J166: [W0] 'B:C204..B:C204
B:A167: (L) '  Return_Surveys
B:C167: (C2) U [W12] 100
B:E167: (L) [W40] 'Cost to return completed surveys
B:I167: [W16] 'PROPN_YES-NO
B:J167: [W0] 'B:C203..B:C203
B:I168: [W16] 'PUBLISH_RFP
B:J168: [W0] 'B:C23..B:C23
B:K168: [W55] 'Secretary hours to publish proposal
B:A169: 'Stationery:
B:I169: [W16] 'QUIT
B:J169: [W0] 'A:D219..A:D219
B:A170: '  Env_#10
B:C170: (C2) U [W12] 0.03
B:E170: (L) [W40] 'Cost of #10 envelope
B:I170: [W16] 'RANGE_LABELS
B:J170: [W0] 'B:I1..B:K171
B:K170: [W55] ' [ Spread sheet location for table of range names, labels ]
B:A171: '  Letterhead
B:C171: (C2) U [W12] 0.02
B:E171: (L) [W40] 'Cost of 1 page letterhead stationery
B:I171: [W16] 'RECRUIT
B:J171: [W0] 'A:D133..A:D133
B:A172: '  Env_9x12
B:C172: (C2) U [W12] 0.15
B:E172: (L) [W40] 'Cost of 9"x12" envelope
B:I172: [W16] 'RECRUIT_SURVEY
B:J172: [W0] 'B:C264..B:C264
```

```
B:A173: '  Print_Card
B:C173: (C2) U [W12] 0.01
B:E173: (L) [W40] 'Cost of printing one post card
B:I173: [W16] 'RECR_RATE
B:J173: [W0] 'B:C145..B:C145
B:K173: [W55] 'hourly pay rate for US Army recruiters
B:A174: (L) '  Page_Print_Cost
B:C174: (C2) U [W12] 0.02
B:E174: (L) [W40] 'Cost of printing a letter
B:I174: [W16] 'RESP_RATE_1
B:J174: [W0] 'B:C111..B:C111
B:K174: [W55] 'Initial response rate (before reminder card)
B:A175: (L) '  Disk_Mailer
B:C175: (C2) U [W12] 0.2
B:E175: (L) [W40] 'Cost of diskette mailer
B:I175: [W16] 'RESP_RATE_2
B:J175: [W0] 'B:C112..B:C112
B:K175: [W55] 'Response rate before sending 2nd survey packet
B:I176: [W16] 'RESP_RATE_3
B:J176: [W0] 'B:C113..B:C113
B:K176: [W55] 'Response rate after 2nd survey packet
B:A177: (L) 'Costs of Other Supplies:
B:I177: [W16] 'RETURN_METHOD
B:J177: [W0] 'B:C235..B:C235
B:A178: (L) '  Cost_Diskette
B:C178: (C2) U [W12] 0.35
B:E178: (L) [W40] 'Cost of microcomputer diskette
B:I178: [W16] 'RETURN_POSTAGE
B:J178: [W0] 'A:D115..A:D115
B:A179: (L) '  Incentive
B:C179: (C2) U [W12] 1.5
B:E179: (L) [W40] 'Cost of incentive for mail survey respondents
B:I179: [W16] 'RETURN_SURVEYS
B:J179: [W0] 'B:C167..B:C167
B:K179: [W55] 'Cost of bulk returning group admin.surveys from site
B:A180: (L) '  Mag_Tape
B:C180: (C2) U [W12] 24
B:E180: (L) [W40] 'Cost of computer magnetic tape
B:I180: [W16] 'REVISE_COST
B:J180: [W0] 'C:B26..C:B26
B:K180: [W55] 'Cost of revising pilot survey to final form
B:I181: [W16] 'RFP_COST
B:J181: [W0] 'C:B10..C:B10
B:K181: [W55] 'Cost of soliciting bids for the project
B:A182: (L) 'Any other survey costs not yet itemized:
B:I182: [W16] 'SAMP
B:J182: [W0] 'A:D151..A:D151
B:A183: (L) '  All_Other_Costs
B:C183: (C2) U [W12] 0
B:E183: (L) [W40] 'All other survey costs
B:I183: [W16] 'SAMPL_COST
B:J183: [W0] 'C:B9..C:B9
B:K183: [W55] 'Cost of selecting and implementing sampling plan
B:I184: [W16] 'SAMPL_DECISION
B:J184: [W0] 'B:C18..B:C18
B:K184: [W55] 'Professional hours to select sampling plan
B:I185: [W16] 'SAMPL_PRACTICAL
B:J185: [W0] 'B:C19..B:C19
B:K185: [W55] 'Professional hours to implement sampling plan
B:A186: (L) 'Survey sampling methodology:
B:I186: [W16] 'SAMP_METH
B:J186: [W0] 'B:C253..B:C253
B:K186: [W55] 'Survey sampling method selected
B:I187: [W16] 'SASE
B:J187: [W0] 'B:C163..B:C163
B:K187: [W55] 'Cost of SASE to return mail survey
B:A188: '  N_strata
B:C188: U [W12] 4
B:E188: (L) [W40] 'N of strata in stratified sampling design
B:I188: [W16] 'SASE_FOR_RETURN
B:J188: [W0] 'C:B133..C:B133
B:K188: [W55] 'Return mail survey by SASE (=1) or BRE (=0)?
```

```
B:A189: (L) '  Stratum_SD_Decr
B:C189: (F2) U [W12] 0.95
B:E189: (L) [W40] 'Decrease in within-stratum SD compared to SRS
B:I189: [W16] 'SASE_OR_BRE
B:J189: [W0] 'C:B132..C:B132
B:K189: [W55] 'Cost of mail survey return postage, SASE or BRE
B:I190: [W16] 'SAVE_GRAPH
B:J190: [W0] 'A:D212..A:D212
B:A191: (L) '  N_Clus_Tot
B:C191: (F0) U [W12] 2000
B:E191: (L) [W40] 'Total number of clusters
B:I191: [W16] 'SCANNABLE
B:J191: [W0] 'C:B130..C:B130
B:A192: (L) '  N_Clus_Samp
B:C192: (F0) U [W12] 50
B:E192: (L) [W40] 'N of clusters sampled
B:I192: [W16] 'SCAN_BK_OTHER
B:J192: [W0] 'B:C61..B:C61
B:A193: (L) '  N_per_Clus
B:C193: (F0) U [W12] +N_SURVEYS/N_CLUS_SAMP
B:E193: (F0) [W40] 'N per cluster = N_SURVEYS/N_CLUS_SAMP
B:I193: [W16] 'SCAN_BOOK_COST
B:J193: [W0] 'C:B34..C:B34
B:K193: [W55] 'Costs of printing all scannable booklets
B:A194: (L) '  SD_Clus_5
B:C194: (F2) U [W12] 0.14
B:E194: (L) [W40] 'SD of cluster means (5-point Likert item)
B:I194: [W16] 'SCAN_CAPTURE
B:J194: [W0] 'C:B168..C:B168
B:K194: [W55] 'Cost of data capture for scannable booklets
B:I195: [W16] 'SCAN_OR_PAPER
B:J195: [W0] 'C:B151..C:B151
B:K195: [W55] 'Cost of shipping booklets from tele.survey site
B:I196: [W16] 'SCAN_PROGRAM
B:J196: [W0] 'B:C65..B:C65
B:K196: [W55] 'Cost of programming scanner for the survey
B:I197: [W16] 'SD_CLUS_5
B:J197: [W0] 'B:C194..B:C194
B:A198: 'Data on survey items:
B:I198: [W16] 'SD_LIKERT-4
B:J198: [W0] 'B:C202..B:C202
B:K198: [W55] 'Approx SD of 4-option Likert item
B:I199: [W16] 'SD_LIKERT-5
B:J199: [W0] 'B:C201..B:C201
B:K199: [W55] 'Approx SD of 5-response Likert item
B:A200: '  SD_Likert-7
B:C200: U [W12] 1.11
B:E200: (L) [W40] 'Typical SD for 7-point Likert item
B:I200: [W16] 'SD_LIKERT-7
B:J200: [W0] 'B:C200..B:C200
B:K200: [W55] 'Approx SD of 7-option Likert item
B:A201: '  SD_Likert-5
B:C201: U [W12] 0.95
B:E201: (L) [W40] 'Typical SD for 5-point Likert item
B:I201: [W16] 'SECTY_DESIGN
B:J201: [W0] 'B:C45..B:C45
B:K201: [W55] 'Secretarial hours to create survey drafts
B:A202: (L) '  SD_Likert-4
B:C202: (F2) U [W12] 0.9
B:E202: (L) [W40] 'Typical SD for 4-point Likert item
B:I202: [W16] 'SECTY_PILOT
B:J202: [W0] 'B:C47..B:C47
B:K202: [W55] 'Secretary hours for pilot test
B:A203: (L) '  PROPN_yes-no
B:C203: (F2) U [W12] 0.5
B:E203: (L) [W40] 'Proportion selecting "yes" or "no"
B:I203: [W16] 'SECTY_RATE
B:J203: [W0] 'B:C143..B:C143
B:K203: [W55] 'Hourly pay rate for secretarial work
B:A204: (L) '  PROPN_demog
B:C204: (F2) U [W12] 0.25
B:E204: (L) [W40] 'Proportion selecting the demographic category
```

```
B:I204: [W16] 'SECTY_REVISE
B:J204: [W0] 'B:C49..B:C49
B:K204: [W55] 'Secretarial hours to revise survey after pilot
B:I205: [W16] 'SHIP_FROM_SITE
B:J205: [W0] 'B:C166..B:C166
B:K205: [W55] 'Cost of bulk shipping blank surveys from group adm.site
B:I206: [W16] 'SHIP_TO_SITE
B:J206: [W0] 'B:C165..B:C165
B:K206: [W55] 'Cost of bulk shipping surveys to group admin site
B:A207: (L) 'Multipliers for overhead rates:
B:I207: [W16] 'SITE
B:J207: [W0] 'A:D138..A:D138
B:I208: [W16] 'SITE_TRAVEL
B:J208: [W0] 'B:C152..B:C152
B:K208: [W55] 'Cost of R.T. travel to survey admin site
B:A209: (L) '  OHD_Management
B:C209: (F1) U [W12] 1.2
B:E209: (L) [W40] 'Overhead multiplier for project management
B:I209: [W16] 'STRATUM_SD_DECR
B:J209: [W0] 'B:C189..B:C189
B:A210: (L) '  OHD_Creation
B:C210: (F1) U [W12] 1.2
B:E210: (L) [W40] 'Multiplier for survey creation phase
B:I210: [W16] 'STUFFED_PER_HR
B:J210: [W0] 'B:C110..B:C110
B:A211: (L) '  OHD_Publish
B:C211: (F1) U [W12] 1.2
B:E211: (L) [W40] 'Multiplier for survey publication phase
B:I211: [W16] 'SUPPLIES
B:J211: [W0] 'D:A289..D:A289
B:A212: (L) '  OHD_Administer
B:C212: (F1) U [W12] 1.2
B:E212: (L) [W40] 'Multiplier for survey administration phase
B:I212: [W16] 'SURVEY
B:J212: [W0] 'A:D83..A:D83
B:A213: (L) '  OHD_Data
B:C213: (F1) U [W12] 1.2
B:E213: (L) [W40] 'Multiplier for data capturing phase
B:I213: [W16] 'SURVEY_BK_COST
B:J213: [W0] 'C:B129..C:B129
B:K213: [W55] 'Total cost of mail surveys bks, scannable or paper-pencil
B:I214: [W16] 'SURVEY_COST
B:J214: [W0] 'C:B210..C:B210
B:I215: [W16] 'SURVEY_MEDIUM
B:J215: [W0] 'B:C243..B:C243
B:I216: [W16] 'SURVEY_PACKET
B:J216: [W0] 'C:B103..C:B103
B:I217: [W16] 'SURVEY_POSTAGE
B:J217: [W0] 'B:C162..B:C162
B:K217: [W55] 'Cost of mailing out the survey packet
B:A218: (L) 'Selection of Survey Administration Method (select one):
B:I218: [W16] 'TELE
B:J218: [W0] 'A:D123..A:D123
B:A219: (L) '  G:  Group survey administration
B:I219: [W16] 'TELEMKT_RATE
B:J219: [W0] 'B:C146..B:C146
B:K219: [W55] 'Hourly pay rate for telephone interviewers
B:A220: (L) '  M:  Mail survey administration
B:I220: [W16] 'TELE_ADM_COST
B:J220: [W0] 'C:B146..C:B146
B:K220: [W55] 'Cost of administering telephone survey
B:A221: (L) '  T:  Telephone administration of survey
B:I221: [W16] 'TELE_CAPTURE
B:J221: [W0] 'C:B189..C:B189
B:K221: [W55] 'Data capture costs for online telephone survey
B:A222: (L) '  C:  Survey administered by microcomputer
B:I222: [W16] 'TELE_DATA_MERGE
B:J222: [W0] 'B:C130..B:C130
B:K222: [W55] 'Cost of managing online tele. survey data
B:A223: (L) 'Admin_Method:
B:C223: (T) [W12] 'G
B:I223: [W16] 'TELE_MEDIUM
```

```
B:J223: [W0] 'B:C243..B:C243
B:I224: [W16] 'TELE_PUBL_COST
B:J224: [W0] 'C:B47..C:B47
B:K224: [W55] 'Cost to publish telephone survey
B:I225: [W16] 'TELE_TOTAL
B:J225: [W0] 'C:B233..C:B233
B:K225: [W55] 'Total cost for telephone survey administration
B:I226: [W16] 'TELE_TRAVEL
B:J226: [W0] 'B:C154..B:C154
B:K226: [W55] 'R.T. travel cost for trainer of telephone interviewers
B:A227: (L) 'Type of survey booklet for mail surveys:
B:I227: [W16] 'TEL_ITEM_PER_HR
B:J227: [W0] 'B:C119..B:C119
B:A228: (L) '  S:  Scannable
B:I228: [W16] 'TEMP_ADMIN
B:J228: [W0] 'E:C20..E:C20
B:A229: (L) '  P:  Paper-and-pencil
B:I229: [W16] 'TEMP_KEYP
B:J229: [W0] 'C:B41..C:B41
B:K229: [W55] 'Temp cell used in calculations
B:A230: (L) 'Mail_booklet:
B:C230: (F2) [W12] ^S
B:I230: [W16] 'TEMP_N
B:J230: [W0] 'E:C36..E:C36
B:I231: [W16] 'TEMP_SCAN
B:J231: [W0] 'C:B36..C:B36
B:K231: [W55] ' [ temp location used for calculations ]
B:A232: (L) 'Return postage for mail surveys:
B:I232: [W16] 'TEMP_SD
B:J232: [W0] 'E:C53..E:C53
B:A233: (L) '  S:  Self-addressed stamped envelope
B:I233: [W16] 'TRAIN_COST
B:J233: [W0] 'C:A66..C:A66
B:K233: [W55] 'Cost of training group survey administrators
B:A234: (L) '  B:  Business reply envelope
B:I234: [W16] 'TRAVEL
B:J234: [W0] 'D:A252..D:A252
B:A235: (L) 'Return_Method:
B:C235: (F2) [W12] ^B
B:I235: [W16] 'TYPE_BOOKLET
B:J235: [W0] 'C:B42..C:B42
B:K235: [W55] 'Cost of typing paper-pencil survey booklet
B:I236: [W16] 'TYPE_COST
B:J236: [W0] 'B:C58..B:C58
B:K236: [W55] 'Cost of typesetting scannable booklets
B:I237: [W16] 'TYPE_OPEN_ENDED
B:J237: [W0] 'B:C136..B:C136
B:K237: [W55] 'Cost to type one open-ended item for 1 respondent
B:I238: [W16] 'TYPE_RFP
B:J238: [W0] 'B:C22..B:C22
B:K238: [W55] 'Secretary hours to type proposal
B:A239: (L) 'Survey medium for telephone surveys:
B:I239: [W16] 'WAGES
B:J239: [W0] 'D:A233..D:A233
B:A240: (L) '  S:  Scannable
B:I240: [W16] 'WRITE_CARD_HRS
B:J240: [W0] 'B:C107..B:C107
B:K240: [W55] 'Hours prof. time to write post card
B:A241: (L) '  P:  Paper-and-pencil
B:I241: [W16] 'WRITE_RFP
B:J241: [W0] 'B:C21..B:C21
B:K241: [W55] 'Professional hours to write proposal
B:A242: (L) '  O:  Online data capture
B:I242: [W16] 'WRITE_TAPE
B:J242: [W0] 'B:C134..B:C134
B:K242: [W55] 'Cost of writing data to magnetic tape
B:A243: (L) 'Tele_Medium:
B:C243: (F2) [W12] ^P
B:I243: [W16] 'X_AXIS
B:J243: [W0] 'B:C278..B:C278
B:I244: [W16] 'X_AXIS_TABLE
B:J244: [W0] 'B:C298..B:D299
```

```
B:I245: [W16] 'X_MENU
B:J245: [W0] 'A:D187..A:D187
B:I246: [W16] 'Y_AXIS
B:J246: [W0] 'B:C273..B:C273
B:I247: [W16] 'Y_MENU
B:J247: [W0] 'A:D169..A:D169
B:I248: [W16] '\O
B:J248: [W0] 'A:B54..A:B54
B:A249: (L) 'Selection of Survey Sampling Method (select one):
B:I249: [W16] '\E
B:J249: [W0] 'B:A309..B:A309
B:A250: (L) '  R:  Simple random sampling
B:I250: [W16] '\F
B:J250: [W0] 'B:A310..B:A310
B:A251: (L) '  S:  Proportional stratified sampling
B:I251: [W16] '\M
B:J251: [W0] 'A:B54..A:B54
B:A252: (L) '  C:  Cluster sampling
B:A253: (L) 'Samp_Meth:
B:C253: (F0) [W12] ^R
B:A257: (L) 'Survey of Army recruits or prospects?
B:A258: (L) '  Y:  Yes, at time of
B:A259: (L) '      I:  Initial Appointment
B:A260: (L) '      A:  Application
B:A261: (L) '      C:  Contracting
B:A262: (L) '      P:  Point of Accession
B:A263: (L) '  N:  No, survey not restricted to the recruiting process
B:A264: (L) 'Recruit_Survey:
B:C264: (F2) [W12] ^C
B:A268: (L) 'Plot characteristics:
B:A270: (L) '  Select dependent variable (plotted on y-Axis)
B:A271: (L) '    C:  Cost for the survey project
B:A272: (L) '    R:  Per-Respondent cost for the survey project
B:A273: (L) '    E:  Errors
B:A274: (L) '  Y_Axis:
B:C274: (F0) [W12] ^R
B:A276: (L) '  Select independent variable (plotted on x-Axis)
B:A277: (L) '    N:  Number of surveys completed
B:A278: (L) '    A:  Administration method
B:A279: (L) '  X_Axis:
B:C279: (F0) [W12] ^A
B:A281: (L) '  If the Y_Axis is Survey Sampling Error, select type of survey item
B:A282: (L) '    4:  4-point Likert item
B:A283: (L) '    5:  5-point Likert item
B:A284: (L) '    7:  7-point Likert item
B:A285: (L) '    Y:  Yes-No item
B:A286: (L) '    D:  Demographic item
B:A287: (L) '  Item_type:
B:C287: (F2) [W12] ^4
B:A289: (L) '  Iterate to add a new data series to the current plot?
B:A290: (L) '    Y:  Yes, add a new data series
B:A291: (L) '    N:  No, delete current data before plotting a new graph
B:A292: (L) '  Iterate:
B:C292: (F0) [W12] ^Y
B:A296: (L) 'Table of graphs available (and graph names):
B:A297: (L) '[ Err_Admin is not available yet, and might not be meaningful ]
B:C299: (L) [W12] "N
B:D299: (L) [W2] 'A
B:C300: (F0) [W12] 1
B:D300: (F0) [W2] 2
B:A301: (L) 'y_axis
B:B301: (L) [W9] "C
B:C301: (F2) [W12] "Cost_N
B:D301: (F2) [W2] ^Cost_Adm
B:A302: (L) "variable:
B:B302: (L) [W9] "R
B:C302: (L) [W12] "Resp_N
B:D302: (L) [W2] 'Resp_Adm
B:B303: (L) [W9] "E
B:C303: (F2) [W12] "Error_N
B:D303: (F2) [W2] ^Err_Admin
B:A305: (L) 'Graph_Name:
```

```
B:C305: (F0) [W12] 'Macro_Resp_Adm
```

Level C: Cell Formulas

```
C:A2: [W18] 'Computed survey costs on this worksheet
C:A3: [W18] \=
C:B3: [W15] \=
C:C3: [W3] \=
C:D3: \=
C:E3: \=
C:F3: [W12] \=
C:A5: [W18] 'Survey project management costs:
C:A6: [W18] \=
C:B6: [W15] \=
C:C6: [W3] \=
C:D6: \=
C:E6: \=
C:F6: [W12] \=
C:A8: [W18] 'Mgmt_Cost
C:B8: (C2) [W15]
      (SAMPL_COST+RFP_COST+AWARD_COST+ONGOING_COST+DATA_ANALYSIS+FINAL_REPORT+MGMT_OTHER)*OHD_MANAGEMENT
C:D8: (C2)
      '(SAMPL_COST+RFP_COST+AWARD_COST+ONGOING_COST+DATA_ANALYSIS+FINAL_REPORT+MGMT_OTHER)*OHD_MANAGEMENT
C:A9: [W18] '  Sampl_Cost
C:B9: (C2) [W15] (SAMPL_DECISION+SAMPL_PRACTICAL)*PROF_RATE
C:D9: (C2) '(SAMPL_DECISION+SAMPL_PRACTICAL)*PROF_RATE
C:A10: [W18] '  RFP_Cost
C:B10: (C2) [W15] +WRITE_RFP*PROF_RATE+(TYPE_RFP+PUBLISH_RFP+MISC_RFP)*SECTY_RATE
C:D10: (C2) 'WRITE_RFP*PROF_RATE+(TYPE_RFP+PUBLISH_RFP+MISC_RFP)*SECTY_RATE
C:A11: [W18] '  Award_Cost
C:B11: (C2) [W15] +EVALUATE_BIDS*PROF_RATE+PROCESS_BIDS*SECTY_RATE
C:D11: 'EVALUATE_BIDS*PROF_RATE+PROCESS_BIDS*SECTY_RATE
C:A12: [W18] '  Ongoing_Cost
C:B12: (C2) [W15] +DELIVERABLES+INFO_PUBLISH
C:D12: (C2) 'DELIVERABLES+INFO_PUBLISH
C:A13: [W18] '    Deliverables
C:B13: (C2) [W15] +DELIV_PROF*PROF_RATE+DELIV_SECTY*SECTY_RATE
C:D13: (C2) 'DELIV_PROF*PROF_RATE+DELIV_SECTY*SECTY_RATE
C:A14: [W18] '    Info_Publish
C:B14: (C2) [W15] +INFO_PROF*PROF_RATE+INFO_SECTY*SECTY_RATE
C:D14: (C2) 'INFO_PROF*PROF_RATE+INFO_SECTY*SECTY_RATE
C:A15: [W18] '  Data_Analysis
C:B15: (C2) [W15] +DATA_ANAL_HRS*PROGRAMMER_RATE
C:D15: (C2) 'DATA_ANAL_HRS*PROGRAMMER_RATE
C:A16: [W18] '  Final_Report
C:B16: (C2) [W15] +FINAL_PROF*PROF_RATE+FINAL_SECTY*SECTY_RATE
C:D16: (C2) 'FINAL_PROF*PROF_RATE+FINAL_SECTY*SECTY_RATE
C:A17: [W18] 'Mgmt_Other
C:B17: (C2) [W15] +MGMT_OTHER
C:D17: 'Other project management costs
C:A20: [W18] 'Survey creation costs:
C:A21: [W18] \=
C:B21: [W15] \=
C:C21: [W3] \=
C:D21: \=
C:E21: \=
C:F21: [W12] \=
C:A23: [W18] 'Crea_Cost
C:B23: (C2) [W15] (DESIGN_COST+PILOT_COST+REVISE_COST+CREATE_OTHER)*OHD_CREATION
C:D23: (C2) '(DESIGN_COST+PILOT_COST+REVISE_COST+CREATE_OTHER)*OHD_CREATION
C:A24: [W18] '  Design_Cost
C:B24: (C2) [W15] +SECTY_DESIGN*SECTY_RATE+(CONTENT_TIME+ITEM_TIME)*PROF_RATE
C:D24: '+SECTY_DESIGN*SECTY_RATE+(CONTENT_TIME+ITEM_TIME)*PROF_RATE
C:A25: [W18] '  Pilot_Cost
C:B25: (C2) [W15] +ASST_PILOT*ASST_RATE+SECTY_PILOT*SECTY_RATE+PROF_PILOT*PROF_RATE
C:D25: '+ASST_PILOT*ASST_RATE+SECTY_PILOT*SECTY_RATE+PROF_PILOT*PROF_RATE
C:A26: [W18] '  Revise_Cost
C:B26: (C2) [W15] +SECTY_REVISE*SECTY_RATE+PROF_REVISE*PROF_RATE
C:D26: '+SECTY_REVISE*SECTY_RATE+PROF_REVISE*PROF_RATE
C:A27: [W18] '  Create_Other
C:B27: (C2) [W15] +CREATE_OTHER
C:D27: 'Other survey creation costs
```

```
C:A28: [W18] 'Crea_Item_Cost
C:B28: (C2) [W15] +CREA_COST/N_ITEMS
C:D28: (C2) '+CREA_COST/N_ITEMS
C:A31: [W18] 'Survey Publication Costs
C:A32: [W18] \=
C:B32: [W15] \=
C:C32: [W3] \=
C:D32: \=
C:E32: \=
C:F32: [W12] \=
C:A34: [W18] 'Scan_Book_Cost
C:B34: (C2) [W15]
       (MOCKUP_COST+COLOR_COST+LITHO_COST+TYPE_COST+N_SURVEYS*PRINT_COST+SCAN_BK_OTHER)*OHD_PUBLISH
C:D34: (C2) '(MOCKUP_COST+COLOR_COST+LITHO_COST+TYPE_COST+N_SURVEYS*PRINT_COST+SCAN_BK_OTHER)*OHD_PUBLISH
C:A35: [W18] '  N_Scan_Pages
C:B35: [W15] @IF(@MOD(TEMP_SCAN,4)=0,TEMP_SCAN,4*(@INT(TEMP_SCAN/4)+1))
C:D35: '@IF(@MOD(TEMP_SCAN,4)=0,TEMP_SCAN,4*(@INT(TEMP_SCAN/4)+1))
C:A36: [W18] '    Temp_Scan
C:B36: [W15] 3+N_OPEN/5+N_CHOICE/12+N_MULTR/60
C:D36: '3+N_OPEN/5+N_CHOICE/12+N_MULTR/60
C:A37: [W18] 'Each_Scan_Book
C:B37: (C2) [W15] +SCAN_BOOK_COST/N_SURVEYS
C:D37: (C2) 'SCAN_BOOK_COST/N_SURVEYS
C:A39: [W18] 'Keyp_Book_Cost
C:B39: (C2) [W15] (TYPE_BOOKLET+(BIND_BOOKLET+PRINT_BOOKLET)*N_SURVEYS)*OHD_PUBLISH
C:D39: (C2) '(TYPE_BOOKLET+(BIND_BOOKLET+PRINT_BOOKLET)*N_SURVEYS)*ohd_publish
C:A40: [W18] '  N_Keyp_Pages
C:B40: [W15] @IF(@MOD(TEMP_KEYP,4)=0,TEMP_KEYP,4*(@INT(TEMP_KEYP/4)+1))
C:D40: '@IF(@MOD(TEMP_KEYP,4)=0,TEMP_KEYP,4*(@INT(TEMP_KEYP/4)+1))
C:A41: [W18] '    Temp_Keyp
C:B41: [W15] 3+N_OPEN/5+N_CHOICE/10+N_MULTR/40
C:D41: '3+N_OPEN/5+N_CHOICE/10+N_MULTR/40
C:A42: [W18] '  Type_Booklet
C:B42: (C2) [W15] +N_KEYP_PAGES*KEYP_TYPE_HRS*SECTY_RATE
C:D42: (C2) 'N_KEYP_PAGES*KEYP_TYPE_HRS*SECTY_RATE
C:A43: [W18] '  Print_Booklet
C:B43: (C2) [W15] +N_KEYP_PAGES*KEYP_PRINT
C:D43: (C2) 'N_KEYP_PAGES*KEYP_PRINT
C:A44: [W18] '  BIND_BOOKLET
C:B44: [W15] +BIND_BOOKLET
C:D44: '(Cost of stapling or binding one booklet)
C:A45: [W18] 'Each_Keyp_Book
C:B45: (C2) [W15] +KEYP_BOOK_COST/N_SURVEYS
C:D45: (C2) 'KEYP_PUBL_COST/N_SURVEYS
C:A47: (L) [W18] 'Tele_Publ_Cost
C:B47: (C2) [W15] @SUM(B48..B50)*OHD_PUBLISH
C:D47: (C2) '(Sum of three items below)*OHD_PUBLISH
C:A48: [W18] '  progr. time
C:B48: (C2) [W15] +N_ITEMS*PROGRAMMER_RATE/TEL_ITEM_PER_HR
C:D48: (C2) '+N_ITEMS*PROGRAMMER_RATE/TEL_ITEM_PER_HR
C:A49: [W18] '  diskette costs
C:B49: (C2) [W15] +N_INTERV*COST_DISKETTE
C:D49: (C2) 'N_INTERV*COST_DISKETTE
C:A50: [W18] '  media cost
C:B50: (C2) [W15] @IF(ONLINE=1,0,SCAN_OR_PAPER)
C:D50: (C2) '@IF(ONLINE=1,0,SCAN_OR_PAPER)
C:A52: [W18] 'Comp_Publ_Cost
C:B52: (C2) [W15] @SUM(B53..B56)*OHD_PUBLISH
C:D52: '(Sum of first four items below)*OHD_PUBLISH
C:A53: [W18] '  programming costs
C:B53: (C2) [W15] +N_ITEMS*PROGRAMMER_RATE/PC_ITMS_PER_HR
C:D53: (C2) '+N_ITEMS*PROGRAMMER_RATE/PC_ITMS_PER_HR
C:A54: [W18] '  diskette cost
C:B54: (C2) [W15] +N_STATIONS*N_MONTHS*COST_DISKETTE
C:D54: (C2) 'N_STATIONS*N_MONTHS*COST_DISKETTE
C:A55: [W18] '  copy to diskette
C:B55: (C2) [W15] +N_STATIONS*N_MONTHS*DISK_COPY_HRS*PROGRAMMER_RATE
C:D55: (C2) 'N_STATIONS*N_MONTHS*DISK_COPY_HRS*PROGRAMMER_RATE
C:A56: [W18] '  user manual cost
C:B56: (C2) [W15] +INSTR_BOOK_HRS*PROF_RATE+B58..B58*N_RECRUITER
C:D56: (C2) 'INSTR_BOOK_HRS*PROF_RATE+INSTR_BK_MISC*N_RECRUITER
C:A57: [W18] '    INSTR_BOOK_HRS
```

```
C:B57: (F2) [W15] +INSTR_BOOK_HRS
C:D57: 'write instruction booklet
C:A58: [W18] '    Instr_Bk_Misc
C:B58: (C2) [W15] +INSTR_BK_MISC
C:D58: 'typing, printing costs for instruction booklet
C:A62: [W18] 'Survey Administration Costs
C:A63: [W18] \=
C:B63: [W15] \=
C:C63: [W3] \=
C:D63: \=
C:E63: \=
C:F63: [W12] \=
C:A65: [W18] 'GROUP ADMINISTRATION OF SURVEYS
C:C65: [W3] \=
C:D65: \=
C:E65: \=
C:A66: (C2) [W18] +HOURS_TO_TRAIN*(PROF_RATE+N_ADMINISTR*ASST_RATE)
C:B66: [W15] '  Train_Cost
C:D66: '+HOURS_TO_TRAIN*(PROF_RATE+N_ADMINISTR*ASST_RATE)
C:A67: (C2) [W18] +N_ADMINISTR*SITE_TRAVEL
C:B67: [W15] '  Admin_Travel
C:D67: '+N_ADMINISTR*SITE_TRAVEL
C:A68: (C2) [W18] +CAR_RENTAL
C:B68: [W15] '  Car_Rental
C:A69: (C2) [W18] (PER_DIEM+DAILY_ADM_RATE)*ADMIN_DAYS*N_ADMINISTR
C:B69: [W15] '  Admin_Salary
C:D69: '(PER_DIEM+DAILY_ADM_RATE)*ADMIN_DAYS*N_ADMINISTR
C:A70: (C2) [W18] +SHIP_TO_SITE
C:B70: (C2) [W15] '  SHIP_TO_SITE
C:A71: (C2) [W18] +BULK_FED_EX
C:B71: (C2) [W15] '  BULK_FED_EX
C:A72: (C2) [W18] +RETURN_SURVEYS
C:B72: (C2) [W15] '  RETURN_SURVEYS
C:A73: (C2) [W18] +SHIP_FROM_SITE
C:B73: (C2) [W15] '  SHIP_FROM_SITE
C:A74: [W18] '  Group_Adm_Cost
C:B74: (C2) [W15] (TRAIN_COST+@SUM(A67..A73)*N_ADMINS)*OHD_ADMINISTER
C:D74: (C2) '(TRAIN_COST+@SUM(A66..A72)*N_ADMINS)*OHD_ADMINISTER
C:A77: [W18] 'MICROCOMPUTER ADMINISTRATION OF SURVEYS
C:D77: 'VEYS  ===
C:E77: \=
C:A78: (C2) [W18] +N_SURVEYS*RECR_RATE*EXPL_HRS
C:B78: (C2) [W15] '  N_SURVEYS*RECR_RATE*EXPL_HRS
C:A79: (C2) [W18] +HRS_TRAIN_RECR*PROF_RATE
C:B79: (C2) [W15] '  HRS_TRAIN_RECR*PROF_RATE
C:A80: (C2) [W18] (SITE_TRAVEL+PER_DIEM+RECR_RATE*8)*N_RECRUITER
C:B80: (C2) [W15] '  (SITE_TRAVEL+PER_DIEM+RECR_RATE*8)*N_RECRUITER
C:A81: (C2) [W18] +N_STATIONS*N_MONTHS*DISK_COPY_HRS*PROGRAMMER_RATE
C:B81: (C2) [W15] '  N_STATIONS*N_MONTHS*DISK_COPY_HRS*PROGRAMMER_RATE
C:A82: (C2) [W18] +N_STATIONS*N_MONTHS*(DISK_MAILER+2*ENV_9X12+LETTERHEAD+PAGE_PRINT_COST+2
       *FED_EX+(2/ENV_PER_HR+2/STUFFED_PER_HR)*CLERICAL_RATE)
C:B82: (C2) [W15] '  N_STATIONS*N_MONTHS*(DISK_MAILER+2*ENV_9X12+LETTERHEAD+PAGE_PRINT_COST+2
       *FED_EX+(2/ENV_PER_HR+2/STUFFED_PER_HR)*CLERICAL_RATE)
C:A83: [W18] '  Comp_Adm_Cost
C:B83: (C2) [W15] @SUM(A78..A82)*OHD_ADMINISTER
C:C83: [W3] '
C:D83: '(Sum of items above) * OHD_ADMINISTER
C:A86: [W18] 'MAIL ADMINISTRATION OF SURVEYS
C:C86: [W3] \=
C:D86: \=
C:E86: \=
C:A87: (C2) [W18] (COVER_LTR_HRS+WRITE_CARD_HRS)*PROF_RATE
C:B87: [W15] '  (COVER_LTR_HRS+WRITE_CARD_HRS)*PROF_RATE
C:A88: (F0) [W18] +N_SURVEYS/MAIL_RESP_RATE
C:B88: [W15] '  N_SURVEYS/MAIL_RESP_RATE = N_mail_sent
C:A89: (C2) [W18] +MAIL_LIST
C:B89: [W15] '  MAIL_LIST
C:A90: (C2) [W18] +N_MAIL_SENT*CLERICAL_RATE/ENV_PER_HR
C:B90: (C2) [W15] '  N_MAIL_SENT*CLERICAL_RATE/ENV_PER_HR
C:A91: (C2) [W18] +N_MAIL_SENT*CLERICAL_RATE/STUFFED_PER_HR
C:B91: (C2) [W15] '  N_MAIL_SENT*CLERICAL_RATE/STUFFED_PER_HR
C:A92: (C2) [W18] +N_MAIL_SENT*(LETTERHEAD+PAGE_PRINT_COST+ENV_#10+FIRST_CLASS)
```

```
C:B92: (C2) [W15] '  N_MAIL_SENT*(LETTERHEAD+PAGE_PRINT_COST+ENV_#10+FIRST_CLASS)
C:A93: (C2) [W18] +SURVEY_PACKET*N_MAIL_SENT
C:B93: (C2) [W15] '  SURVEY_PACKET*N_MAIL_SENT
C:A94: (C2) [W18] +N_MAIL_SENT*CLERICAL_RATE*(1-RESP_RATE_1)/ENV_PER_HR
C:B94: (C2) [W15] '  N_MAIL_SENT*CLERICAL_RATE*(1-RESP_RATE_1)/ENV_PER_HR
C:A95: (C2) [W18] (POST_CARD+PRINT_CARD)*(1-RESP_RATE_1)*N_MAIL_SENT
C:B95: (C2) [W15] '  (POST_CARD+PRINT_CARD)*(1-RESP_RATE_1)*N_MAIL_SENT
C:A96: (C2) [W18] +SURVEY_PACKET*N_MAIL_SENT*(1-RESP_RATE_2)
C:B96: (C2) [W15] '  SURVEY_PACKET*N_MAIL_SENT*(1-RESP_RATE_2)
C:A97: (C2) [W18] +N_MAIL_SENT*(1-RESP_RATE_3)*CLERICAL_RATE/ENV_PER_HR
C:B97: (C2) [W15] '  N_MAIL_SENT*(1-RESP_RATE_3)*CLERICAL_RATE/ENV_PER_HR
C:A98: (C2) [W18] +N_MAIL_SENT*(1-RESP_RATE_3)*CLERICAL_RATE/STUFFED_PER_HR
C:B98: (C2) [W15] '  N_MAIL_SENT*(1-RESP_RATE_3)*CLERICAL_RATE/STUFFED_PER_HR
C:A99: (C2) [W18] @IF(BRE_FOR_RETURN=1#AND#SASE_FOR_RETURN=0,N_MAIL_SENT*MAIL_RESP_RATE*BRE,0)
C:B99: (C2) [W15] '  @IF(BRE_FOR_RETURN=1#AND#SASE_FOR_RETURN=0,N_MAIL_SENT*MAIL_RESP_RATE*BRE,0)
C:A100: (C2) [W18] (LETTERHEAD+PAGE_PRINT_COST+ENV_#10+FIRST_CLASS)*(1-RESP_RATE_3)*N_MAIL_SENT
C:B100: (C2) [W15] '  (LETTERHEAD+PAGE_PRINT_COST+ENV_#10+FIRST_CLASS)*(1-RESP_RATE_3)*N_MAIL_SENT
C:A101: [W18] '  Mail_Adm_Cost
C:B101: (C2) [W15] @SUM(A87..A100)*OHD_ADMINISTER
C:D101: '(Sum of above items) * OHD_ADMINISTER
C:A103: [W18] '  Survey_packet
C:B103: (C2) [W15] @IF(SASE_FOR_RETURN=1,PACKET_SASE,@IF(BRE_FOR_RETURN=1,PACKET_BRE,ERR))
C:D103: (C2) '@IF(SASE_FOR_RETURN=1,PACKET_SASE,@IF(BRE_FOR_RETURN=1,PACKET_BRE,ERR))
C:A105: [W18] 'Cost for one mailed survey packet using SASE:
C:A106: (C2) [W18] +SURVEY_POSTAGE
C:B106: [W15] '  SURVEY_POSTAGE
C:A107: [W18] +LETTERHEAD+PAGE_PRINT_COST
C:B107: [W15] '  LETTERHEAD+PAGE_PRINT_COST
C:A108: (C2) [W18] +CLERICAL_RATE/ENV_PER_HR
C:B108: (C2) [W15] '  CLERICAL_RATE/ENV_PER_HR
C:A109: (C2) [W18] +CLERICAL_RATE/STUFFED_PER_HR
C:B109: (C2) [W15] '  CLERICAL_RATE/STUFFED_PER_HR
C:A110: (C2) [W18] +SURVEY_BK_COST
C:B110: (C2) [W15] '  SURVEY_BK_COST
C:A111: (C2) [W18] +INCENTIVE
C:B111: [W15] '  INCENTIVE
C:A112: (C2) [W18] +SASE
C:B112: [W15] '  SASE
C:A113: (C2) [W18] '    Packet_SASE
C:B113: (C2) [W15] @SUM(A106..A112)
C:A115: [W18] 'Cost for one mailed survey packet using BRE:
C:A116: (C2) [W18] +SURVEY_POSTAGE
C:B116: [W15] '  SURVEY_POSTAGE
C:A117: (C2) [W18] +LETTERHEAD+PAGE_PRINT_COST
C:B117: [W15] '  LETTERHEAD+PAGE_PRINT_COST
C:A118: (C2) [W18] (CLERICAL_RATE/ENV_PER_HR)
C:B118: (C2) [W15] '  CLERICAL_RATE/ENV_PER_HR
C:A119: (C2) [W18] (CLERICAL_RATE/STUFFED_PER_HR)
C:B119: (C2) [W15] '  CLERICAL_RATE/STUFFED_PER_HR
C:A120: (C2) [W18] +SURVEY_BK_COST
C:B120: (C2) [W15]   SURVEY_BK_COST
C:A121: (C2) [W18] +INCENTIVE
C:B121: [W15] '  INCENTIVE
C:A122: (C2) [W18] '    Packet_BRE
C:B122: (C2) [W15] @SUM(A116..A121)
C:A128: [W18] 'Determining survey booklet and return postage cost:
C:A129: [W18] '  Survey_Bk_Cost
C:B129: (C2) [W15] @IF(SCANNABLE=1,EACH_SCAN_BOOK,@IF(PAPER_PENCIL=1,B45..B45,ERR))
C:D129: (C2) '  @IF(SCANNABLE=1,EACH_SCAN_BOOK,@IF(PAPER_PENCIL=1,EACH_PAPER_BOOK,ERR))
C:A130: [W18] '  Scannable
C:B130: [W15] @IF(MAIL_BOOKLET="S",1,0)
C:D130: '  @IF(MAIL_BOOKLET="S",1,0)
C:A131: [W18] '  Paper_Pencil
C:B131: [W15] 1-SCANNABLE
C:D131: '  1-SCANNABLE
C:A132: [W18] '  SASE_or_BRE
C:B132: (C2) [W15] @IF(SASE_FOR_RETURN=1,SASE,@IF(BRE_FOR_RETURN=1,0,ERR))
C:D132: (C2) '  @IF(SASE_FOR_RETURN=1,SASE,@IF(BRE_FOR_RETURN=1,0,ERR))
C:A133: [W18] '  SASE_for_Return
C:B133: [W15] @IF(RETURN_METHOD="S",1,0)
C:D133: '  @IF(RETURN_METHOD="S",1,0)
C:A134: [W18] '  BRE_for_Return
```

```
C:B134: [W15] 1-SASE_FOR_RETURN
C:D134: '  1-SASE_FOR_RETURN
C:A137: [W18] 'TELEPHONE ADMINISTRATION OF SURVEYS
C:D137: \=
C:E137: \=
C:A138: (F2) [W18] +HRS_PER_SURVEY
C:B138: (F2) [W15] '  HRS_PER_SURVEY
C:A139: (C2) [W18] +PROF_RATE*8+TELEMKT_RATE*N_INTERV*HRS_TRAIN_TELE
C:B139: (C2) [W15] '  PROF_RATE*8+TELEMKT_RATE*N_INTERV*HRS_TRAIN_TELE
C:A140: (C2) [W18] +TELE_TRAVEL
C:B140: [W15] '  TELE_TRAVEL (for trainer travel to interviewer site)
C:A141: (C2) [W18] +PER_DIEM
C:B141: [W15] '  PER_DIEM
C:A142: (C2) [W18] +MAIL_LIST
C:B142: [W15] '  MAIL_LIST
C:A143: (C2) [W18] +N_SURVEYS*HRS_PER_SURVEY*HOURLY_LONG_D
C:B143: [W15] '  N_SURVEYS*HRS_PER_SURVEY*HOURLY_LONG_D
C:A144: (C2) [W18] +N_SURVEYS*HRS_PER_SURVEY*TELEMKT_RATE
C:B144: (C2) [W15] '  N_SURVEYS*HRS_PER_SURVEY*TELEMKT_RATE
C:A145: (C2) [W18] @IF(ONLINE=1,ONLINE_DATA,SCAN_OR_PAPER)
C:B145: (C2) [W15] '  @IF(ONLINE=1,ONLINE_DATA,SCAN_OR_PAPER)
C:A146: [W18] 'Tele_Adm_Cost
C:B146: (C2) [W15] @SUM(A139..A145)*OHD_ADMINISTER
C:D146: '(Sum of items above) * OHD_ADMINISTER
C:A148: [W18] 'Determining method of recording data:
C:A149: [W18] '  Online
C:B149: [W15] @IF(TELE_MEDIUM="O",1,0)
C:C149: [W3] '
C:D149: '@IF(TELE_MEDIUM="O",1,0)
C:A150: [W18] '  Online_Data
C:B150: (C2) [W15] +TELE_TRAVEL+PER_DIEM+8*ASST_RATE+BULK_FED_EX
C:D150: (C2) 'TELE_TRAVEL+PER_DIEM+8*ASST_RATE+BULK_FED_EX
C:A151: [W18] '  Scan_or_Paper
C:B151: (C2) [W15] +SHIP_TO_SITE
C:D151: 'Ship_to_Site
C:A154: [W18] 'Data Capture Costs:
C:A155: [W18] \=
C:B155: [W15] \=
C:C155: [W3] \=
C:D155: \=
C:E155: \=
C:F155: [W12] \=
C:A157: [W18] 'Data capture for scannable booklets:
C:A158: (C2) [W18] +SHIP_TO_SITE
C:B158: [W15] '  Ship_to_Site
C:A159: (C2) [W18] +SCAN_PROGRAM
C:B159: [W15] '  Scan_Program
C:A160: (C2) [W18] +BOOKLET_SCAN*N_SURVEYS
C:B160: [W15] '  Booklet_Scan*N_Surveys
C:A161: (C2) [W18] +ITEM_CODE*(N_OPEN_CODED+N_REL_ITEMS)*N_SURVEYS
C:B161: [W15] '  Item_Code*(N_Open_Coded+N_Rel_Items)*N_Surveys
C:A162: (C2) [W18] +TYPE_OPEN_ENDED*N_OPEN_TYPED*N_SURVEYS
C:B162: [W15] '  Type_Open_Ended*N_Open_Typed*N_Surveys
C:A163: (C2) [W18] +MAG_TAPE
C:B163: [W15] '  Mag_Tape
C:A164: (C2) [W18] +CREATE_CODE_BK
C:B164: [W15] '  Create_Code_Bk
C:A165: (C2) [W18] +WRITE_TAPE
C:B165: [W15] '  Write_Tape
C:A166: (C2) [W18] +BULK_FED_EX
C:B166: [W15] '  Bulk_Fed_Ex
C:A167: (C2) [W18] +SHIP_TO_SITE
C:B167: [W15] '  Ship_to_Site
C:A168: [W18] '  Scan_Capture
C:B168: (C2) [W15] @SUM($C:$A158..$C:$A167)*OHD_DATA
C:D168: (C2) '(Sum of above items)*OHD_DATA
C:A170: [W18] 'Data Capture (key-entry) for paper-and-pencil surveys:
C:A171: (C2) [W18] +SHIP_TO_SITE
C:B171: [W15] '  Ship_to_Site
C:A172: (C2) [W18] +KEYP_PROGRAM
C:B172: [W15] '  Keyp_Program
C:A173: (C2) [W18] +ITEM_KEY_COST*N_ITEMS*N_SURVEYS
```

```
C:B173: [W15] '  Item_Key_Cost*N_Items*N_Surveys
C:A174: (C2) [W18] +ITEM_CODE*(N_OPEN_CODED+N_REL_ITEMS)*N_SURVEYS
C:B174: [W15] '  Item_Code*(N_Open_Coded+N_Rel_Items)*N_Surveys
C:A175: (C2) [W18] +TYPE_OPEN_ENDED*N_OPEN_TYPED*N_SURVEYS
C:B175: (C2) [W15] '  TYPE_OPEN_ENDED*N_OPEN_TYPED*N_SURVEYS
C:A176: (C2) [W18] +MAG_TAPE
C:B176: [W15] '  Mag_Tape
C:A177: (C2) [W18] +CREATE_CODE_BK
C:B177: [W15] '  Create_Code_Bk
C:A178: (C2) [W18] +WRITE_TAPE
C:B178: [W15] '  Write_Tape
C:A179: (C2) [W18] +BULK_FED_EX
C:B179: [W15] '  Bulk_Fed_Ex
C:A180: (C2) [W18] +SHIP_TO_SITE
C:B180: (C2) [W15] '  Ship_to_Site
C:A181: [W18] '  Keyp_Capture
C:B181: (C2) [W15] @SUM(A171..A180)*OHD_DATA
C:D181: (C2) '(Sum of above items)*OHD_DATA
C:A183: [W18] 'Data Capture for online telephone surveys:
C:A184: (C2) [W18] +MAG_TAPE
C:B184: [W15] '  Mag_Tape
C:A185: (C2) [W18] +TELE_DATA_MERGE+WRITE_TAPE
C:B185: [W15] '  Tele_Data_Merge+Write_Tape
C:A186: (C2) [W18] +ITEM_CODE*(N_OPEN_CODED+N_REL_ITEMS)*N_SURVEYS
C:B186: [W15] '  Item_Code*(N_Open_Coded+N_Rel_Items)*N_Surveys
C:A187: (C2) [W18] +CREATE_CODE_BK
C:B187: [W15] '  Create_Code_Bk
C:A188: (C2) [W18] +BULK_FED_EX
C:B188: [W15] '  Bulk_Fed_Ex
C:A189: [W18] '  Tele_Capture
C:B189: (C2) [W15] @SUM(A188..A184)*OHD_DATA
C:D189: '(Sum of above items)*OHD_DATA
C:A191: [W18] 'Data Capture for microcomputer-administered surveys:
C:A192: (C2) [W18] +BULK_FED_EX
C:B192: [W15] '  Bulk_Fed_Ex
C:A193: (C2) [W18] +DISK_DATA_MERGE
C:B193: [W15] '  Disk_Data_Merge
C:A194: (C2) [W18] +ITEM_CODE*(N_OPEN_CODED+N_REL_ITEMS)*N_SURVEYS
C:B194: [W15] '  Item_Code*(N_Open_Coded+N_Rel_Items)*N_Surveys
C:A195: (C2) [W18] +MAG_TAPE
C:B195: [W15] '  Mag_Tape
C:A196: (C2) [W18] +WRITE_TAPE
C:B196: [W15] '  Write_Tape
C:A197: (C2) [W18] +CREATE_CODE_BK
C:B197: [W15] '  Create_Code_Bk
C:A198: (C2) [W18] +BULK_FED_EX
C:B198: [W15] '  Bulk_Fed_Ex
C:A199: [W18] '  Micro_Capture
C:B199: (C2) [W15] @SUM(A192..A198)*OHD_DATA
C:D199: '(Sum of above items)*OHD_DATA
C:A201: [W18] 'Various data capture costs
C:A202: [W18] '  Create_Code_Bk
C:B202: (C2) [W15] +CODE_BOOK_ITEM*N_ITEMS
C:D202: (C2) 'CODE_BOOK_ITEM*N_ITEMS
C:A206: [W18] \=
C:B206: [W15] \=
C:C206: [W3] \=
C:D206: \=
C:E206: \=
C:F206: [W12] \=
C:A207: [W18] \=
C:B207: [W15] \=
C:C207: [W3] \=
C:D207: \=
C:E207: \=
C:F207: [W12] \=
C:A209: [W18] 'Total survey costs:
C:A210: [W18] '  Survey_cost
C:B210: (C2) [W15] @VLOOKUP(ADMIN_METHOD,ADMIN_LOOKUP,1)
C:D210: (C2) @VLOOKUP(ADMIN_METHOD,ADMIN_LOOKUP,3)
C:A211: [W18] '  Cost_per_person
C:B211: (C2) [W15] +SURVEY_COST/N_SURVEYS
```

```
C:D211: (C2) 'SURVEY_COST/N_SURVEYS
C:A213: [W18] "Admin_Lookup
C:B213: [W15] "Cost
C:A214: [W18] "G
C:B214: (C2) [W15] +GROUP_TOTAL
C:D214: (L) 'Group survey administration
C:A215: [W18] "M
C:B215: (C2) [W15] +MAIL_TOTAL
C:D215: (L) 'Mail survey administration
C:A216: [W18] "T
C:B216: (C2) [W15] +TELE_TOTAL
C:D216: (L) 'Telephone survey administration
C:A217: [W18] "C
C:B217: (C2) [W15] +COMP_TOTAL
C:D217: (L) 'Survey administered by microcomputer
C:A219: [W18] 'Group_Total
C:B219: (C2) [W15] @SUM(A220..A224)
C:D219: '(sum of five items below)
C:A220: (C2) [W18] +MGMT_COST
C:B220: [W15] '  MGMT_COST
C:A221: (C2) [W18] +CREA_COST
C:B221: [W15] '  CREA_COST
C:A222: (C2) [W18] +GROUP_ADM_COST
C:B222: [W15] '  GROUP_ADM_COST
C:A223: (C2) [W18] +SCAN_BOOK_COST
C:B223: [W15] '  SCAN_BOOK_COST
C:A224: (C2) [W18] +SCAN_CAPTURE
C:B224: [W15] '  SCAN_CAPTURE
C:A226: [W18] 'Mail_Total
C:B226: (C2) [W15] @SUM(A227..A231)
C:D226: '(sum of five items below)
C:A227: (C2) [W18] +MGMT_COST
C:B227: (C2) [W15] '  MGMT_COST
C:A228: (C2) [W18] +CREA_COST
C:B228: (C2) [W15] '  CREA_COST
C:A229: (C2) [W18] +MAIL_ADM_COST
C:B229: (C2) [W15] '  MAIL_ADM_COST
C:A230: (C2) [W18] @IF(SCANNABLE=1,SCAN_BOOK_COST,@IF(PAPER_PENCIL=1,KEYP_BOOK_COST,ERR))
C:B230: (C2) [W15] '  @IF(SCANNABLE=1,SCAN_BOOK_COST,@IF(PAPER_PENCIL=1,KEYP_PUBL_COST,ERR))
C:A231: (C2) [W18] @IF(SCANNABLE=1,SCAN_CAPTURE,@IF(PAPER_PENCIL=1,KEYP_CAPTURE,ERR))
C:B231: (C2) [W15] '  @IF(SCANNABLE=1,SCAN_CAPTURE,@IF(PAPER_PENCIL=1,KEYP_CAPTURE,ERR))
C:A233: [W18] 'Tele_Total
C:B233: (C2) [W15] @SUM(A234..A238)
C:D233: '(sum of five items below)
C:A234: (C2) [W18] +MGMT_COST
C:B234: [W15] '  MGMT_COST
C:A235: (C2) [W18] +CREA_COST
C:B235: [W15] '  CREA_COST
C:A236: (C2) [W18] +TELE_ADM_COST
C:B236: [W15] '  TELE_ADM_COST
C:A237: (C2) [W18]
        @IF(ONLINE=1,TELE_PUBL_COST,@IF(SCANNABLE=1,SCAN_BOOK_COST,@IF(PAPER_PENCIL=1,KEYP_BOOK_COST,ERR)))
C:B237: [W15] '
        @IF(ONLINE=1,TELE_PUBL_COST,@IF(SCANNABLE=1,SCAN_BOOK_COST,@IF(PAPER_PENCIL=1,KEYP_BOOK_COST,ERR)))
C:A238: (C2) [W18]
        @IF(ONLINE=1,MICRO_CAPTURE,@IF(SCANNABLE=1,SCAN_CAPTURE,@IF(PAPER_PENCIL=1,KEYP_CAPTURE,ERR)))
C:B238: [W15] '
        @IF(ONLINE=1,MICRO_CAPTURE,@IF(SCANNABLE=1,SCAN_CAPTURE,@IF(PAPER_PENCIL=1,KEYP_CAPTURE,ERR)))
C:A240: [W18] 'Comp_Total
C:B240: (C2) [W15] @SUM(A241..A245)
C:D240: '(sum of five items below)
C:A241: (C2) [W18] +MGMT_COST
C:B241: [W15] '  MGMT_COST
C:A242: (C2) [W18] +CREA_COST
C:B242: [W15] '  CREA_COST
C:A243: (C2) [W18] +COMP_ADM_COST
C:B243: (C2) [W15] '  COMP_ADM_COST
C:A244: (C2) [W18] +COMP_PUBL_COST
C:B244: [W15] '  COMP_PUBL_COST
C:A245: (C2) [W18] +MICRO_CAPTURE
C:B245: [W15] '  MICRO_CAPTURE
```

Level D: Cell Formulas

```
D:A2: [W36] 'Macros on this sheet
D:A3: [W36] \=
D:B3: [W36] \=
D:C3: \=
D:A6: [W36] 'Graph of Survey_Cost versus N_Surveys:
D:A7: [W36] '   (N_Surveys varies from N_Surveys/4 to N_Surveys*4)
D:A9: [W36] 'Macro_Cost_N:
D:A10: [W36] '{goto}temp_n~
D:A11: [W36] '+N_SURVEYS~
D:A12: [W36] '{edit}{calc}~
D:A13: [W36] '{if iterate="Y"}{branch iterate_cost_N}
D:A14: [W36] '{goto}cost_n~{u 5}{d 5}{L}{r}
D:A15: [W36] '/rndCost_N~
D:A16: [W36] '/rncCost_N~{d 5}{r}~
D:A17: [W36] '{r}/re{d 7}{end}{r}~
D:B17: [W36] 'Iterate_Cost_N:
D:A18: [W36] '{let N_Surveys,.5*Temp_N}~
D:B18: [W36] '{let N_Surveys,.5*Temp_N}~
D:A19: [W36] '{goto}cost_n~{L}{end}{r}{u 5}{d 5}
D:B19: [W36] '{goto}cost_n~{L}{u 5}{d 5}
D:A20: [W36] '{r}+Survey_Cost~
D:B20: [W36] '{end}{r}{r}+Survey_Cost~
D:A21: [W36] '{edit}{calc}~
D:B21: [W36] '{edit}{calc}~
D:A22: [W36] '{L}0.5*Temp_N~{edit}{calc}~{r}
D:B22: [W36] '{let N_Surveys,Temp_N}~
D:A23: [W36] '{let N_Surveys,Temp_N}~
D:B23: [W36] '{d}+Survey_Cost~
D:A24: [W36] '{d}+Survey_Cost~
D:B24: [W36] '{edit}{calc}~
D:A25: [W36] '{edit}{calc}~
D.B25: [W36] '{let N_Surveys,1.5*Temp_N}~
D:A26: [W36] '{L}+Temp_N~{edit}{calc}~{r}
D:B26: [W36] '{d}+Survey_Cost~
D:A27: [W36] '{let N_Surveys,1.5*Temp_N}~
D:B27: [W36] '{edit}{calc}~
D:A28: [W36] '{d}+Survey_Cost~
D:B28: [W36] '{let N_Surveys,2*Temp_N}~
D:A29: [W36] '{edit}{calc}~
D:B29: [W36] '{d}+Survey_Cost~
D:A30: [W36] '{L}1.5*Temp_N~{edit}{calc}~{r}
D:B30: [W36] '{edit}{calc}~
D:A31: [W36] '{let N_Surveys,2*Temp_N}~
D:B31: [W36] '{let N_Surveys,2.5*Temp_N}~
D:A32: [W36] '{d}+Survey_Cost~
D:B32: [W36] '{d}+Survey_Cost~
D:A33: [W36] '{edit}{calc}~
D:B33: [W36] '{edit}{calc}~
D:A34: [W36] '{L}2*Temp_N~{edit}{calc}~{r}
D:B34: [W36] '{let N_Surveys,3*Temp_N}~
D:A35: [W36] '{let N_Surveys,2.5*Temp_N}~
D:B35: [W36] '{d}+Survey_Cost~
D:A36: [W36] '{d}+Survey_Cost~
D:B36: [W36] '{edit}{calc}~
D:A37: [W36] '{edit}{calc}~
D:B37: [W36] '{let N_Surveys,Temp_N}~
D:A38: [W36] '{L}2.5*Temp_N~{edit}{calc}~{r}
D:B38: [W36] '{goto}cost_n~{L}{u 5}{d 5}
D:A39: [W36] '{let N_Surveys,3*Temp_N}~
D:B39: [W36] '/rncCost_n~{end}{l}{r}.{end}{r}~
D:A40: [W36] '{d}+Survey_Cost~
D:B40: [W36] '{goto}Cost_N~{L}{u 5}
D:A41: [W36] '{edit}{calc}~
D:B41: [W36] '{goto}Legend_Cost_N~
D:A42: [W36] '{L}3*Temp_N~{edit}{calc}~{r}
D:B42: [W36] '{L}{U 2}{end}{r}{d 2}
D:A43: [W36] '{let N_Surveys,Temp_N}~
D:B43: [W36] '{GetLabel "Please enter text for this graph's Legend:  ",@CellPointer("coord")}
D:A44: [W36] '{goto}Legend_Cost_N~
D:B44: [W36] '{goto}Legend_Cost_N~
```

```
D:A45: [W36] '{GetLabel "Please enter text for this graph's Legend:  ",Legend_Cost_N}
D:B45: [W36] '{graphon Cost_N_Gr2,nodisplay}
D:A46: [W36] '{graphon Cost_N_Gr,nodisplay}
D:B46: [W36] '/gg{end}{L}{end}{r}~cvq
D:A47: [W36] '/gots{esc}{?}~q
D:B47: [W36] '/xmMenu1~
D:A48: [W36] 'g{end}{L}{end}{r}~c
D:A49: [W36] 'ncCost_N_Gr2~vq
D:A50: [W36] '/xmMenu1~
D:A64: [W36] 'Graph of Survey_Cost versus Administration Method:
D:A65: [W36] '    (Group admin, Mail survey, Telephone survey, and Microcomputer)
D:A67: [W36] 'Macro_Cost_Adm:
D:A68: [W36] '{goto}Temp_Admin~
D:A69: [W36] '+Admin_Method~
D:A70: [W36] '{Edit}{calc}~
D:A71: [W36] '{if iterate="Y"}{branch Iter_Cost_Adm}
D:A72: [W36] '{goto}Cost_Adm~{L}{r}{u 5}{d 5}
D:A73: [W36] '/rndCost_Adm~
D:B73: [W36] 'Iter_Cost_Adm:
D:A74: [W36] '/rncCost_Adm~{d 3}{r}~
D:B74: [W36] '{goto}Cost_Adm~{L}{u 5}{d 5}
D:A75: [W36] '{r}/re{d 5}{end}{r}~
D:B75: [W36] '{let Admin_method,"G"}~
D:A76: [W36] '{let Admin_method,"G"}~
D:B76: [W36] '{end}{r}{r}+Survey_Cost~
D:A77: [W36] '{goto}cost_Adm~{L}{end}{r}{u 5}{d 5}
D:B77: [W36] '{edit}{calc}~
D:A78: [W36] '{r}+Survey_Cost~
D:B78: [W36] '{let Admin_method,"M"}~
D:A79: [W36] '{edit}{calc}~
D:B79: [W36] '{d}+Survey_Cost~
D:A80: [W36] '{let Admin_method,"M"}~
D:B80: [W36] '{edit}{calc}~
D:A81: [W36] '{d}+Survey_Cost~
D:B81: [W36] '{let Admin_method,"T"}~
D:A82: [W36] '{edit}{calc}~
D:B82: [W36] '{d}+Survey_Cos
D:A83: [W36] '{let Admin_method,"T"}~
D:B83: [W36] '{edit}{calc}~
D:A84: [W36] '{d}+Survey_Cost~
D:B84: [W36] '{let Admin_method,"C"}~
D:A85: [W36] '{edit}{calc}~
D:B85: [W36] '{d}+Survey_Cost~
D:A86: [W36] '{let Admin_method,"C"}~
D:B86: [W36] '{edit}{calc}~
D:A87: [W36] '{d}+Survey_Cost~
D:B87: [W36] '{goto}Admin_Method~
D:A88: [W36] '{edit}{calc}~
D:B88: [W36] '+Temp_Admin~
D:A89: [W36] '{Let Admin_Method,+Temp_Admin}~
D:B89: [W36] '{edit}{calc}~
D:A90: [W36] '{goto}Legend_Cost_Adm~
D:B90: [W36] '{goto}Cost_Adm~{L}{r}{u 5}{d 5}
D:A91: [W36] '{GetLabel "Please enter text for this graph's Legend:  ",Legend_Cost_Adm}
D:B91: [W36] '/rndCost_Adm~
D:A92: [W36] '{graphon Cost_Adm_Gr,nodisplay}
D:B92: [W36] '/rncCost_Adm~{end}{l}{end}{r}{d 3}~
D:A93: [W36] '/gots{esc}{?}~q
D:B93: [W36] '{goto}Cost_Adm~{L}{u 5}
D:A94: [W36] 'g{end}{L}{end}{r}~c
D:B94: [W36] '{goto}Legend_Cost_Adm~
D:A95: [W36] 'ncCost_Adm_Gr2~vq
D:B95: [W36] '{L}{U 2}{end}{r}{d 2}
D:A96: [W36] '/xmMenu1~
D:B96: [W36] '{GetLabel "Please enter text for this graph's Legend:  ",@CellPointer("coord")}
D:B97: [W36] '{graphon Cost_Adm_Gr2,nodisplay}
D:B98: [W36] '/gg{end}{L}{end}{r}~cvq
D:B99: [W36] '/xmMenu1~
D:A107: [W36] '   (N_Surveys varies from N_Surveys/2 to N_Surveys*3)
D:A109: [W36] 'Macro_Error_N:
D:A110: [W36] '{if iterate="Y"}{branch Iter_Error_N}
D:A111: [W36] '{goto}Error_n~{L}{r}{U 5}{D 5}
```

```
D:B111: [W36] 'Iter_Error_N:
D:A112: [W36] '/rndError_N~
D:B112: [W36] '{goto}Error_n~{L}{r}{U 5}{D 5}
D:A113: [W36] '/rncError_N~{d 5}{r}~
D:B113: [W36] '/rndError_n~
D:A114: [W36] '{r}/re{d 7}{end}{r}~
D:B114: [W36] '/rncError_N~{L}{d 5}{end}{r}{r}~
D:A115: [W36] '{L}+N_SURVEYS/2~
D:B115: [W36] '{L}{end}{r}
D:A116: [W36] '{Edit}{Calc}~
D:B116: [W36] '{r}+1.96*Temp_SD/@SQRT(N_Surveys/2)~
D:A117: [W36] '{r}+1.96*Temp_SD/@SQRT(N_Surveys/2)~
D:B117: [W36] '{Edit}{Calc}~
D:A118: [W36] '{Edit}{Calc}~
D:B118: [W36] '{d}+1.96*Temp_SD/@SQRT(N_Surveys)~
D:A119: [W36] '{d}{L}+N_Surveys~
D:B119: [W36] '{Edit}{Calc}~
D:A120: [W36] '{r}+1.96*Temp_SD/@SQRT(N_Surveys)~
D:B120: [W36] '{d}+1.96*Temp_SD/@SQRT(N_Surveys*1.5)~
D:A121: [W36] '{Edit}{Calc}~
D:B121: [W36] '{Edit}{Calc}~
D:A122: [W36] '{d}{L}+N_Surveys*1.5~
D:B122: [W36] '{d}+1.96*Temp_SD/@SQRT(N_Surveys*2)~
D:A123: [W36] '{r}+1.96*Temp_SD/@SQRT(N_Surveys*1.5)~
D:B123: [W36] '{Edit}{Calc}~
D:A124: [W36] '{Edit}{Calc}~
D:B124: [W36] '{d}+1.96*Temp_SD/@SQRT(N_Surveys*2.5)~
D:A125: [W36] '{d}{L}+N_Surveys*2~
D:B125: [W36] '{Edit}{Calc}~
D:A126: [W36] '{r}+1.96*Temp_SD/@SQRT(N_Surveys*2)~
D:B126: [W36] '{d}+1.96*Temp_SD/@SQRT(N_Surveys*3)~
D:A127: [W36] '{Edit}{Calc}~
D:B127: [W36] '{Edit}{Calc}~
D:A128: [W36] '{d}{L}+N_Surveys*2.5~
D:B128: [W36] '{d 2}
D:A129: [W36] '{r}+1.96*Temp_SD/@SQRT(N_Surveys*2.5)~
D:B129: [W36] '{GetLabel "Please enter text for this graph's Legend:  ",@CellPointer("coord")}
D:A130: [W36] '{Edit}{Calc}~
D:B130: [W36] '{graphon Error_N_Gr2,nodisplay}
D:A131: [W36] '{d}{L}+N_Surveys*3~
D:B131: [W36] '/gg{end}{L}{end}{r}~c
D:A132: [W36] '{r}+1.96*Temp_SD/@SQRT(N_Surveys*3)~
D:B132: [W36] 'olr.{L}{u 2}{end}{r}{d 2}~qvq
D:A133: [W36] '{Edit}{Calc}~
D:B133: [W36] '/xmMenu1~
D:A134: [W36] '{goto}Legend_Error_N~
D:A135: [W36] '{GetLabel "Please enter text for this graph's legend:  ",Legend_Error_N}
D:A136: [W36] '{graphon Error_N_Gr,nodisplay}
D:A137: [W36] '/gots{esc}{?}~q
D:A138: [W36] 'g{end}{L}{end}{r}~c
D:A139: [W36] 'olr.{L}{u 2}{end}{r}{d 2}~q
D:A140: [W36] 'ncError_N_Gr2~vq
D:A141: [W36] '/xmMenu1~
D:A147: [W36] 'Graph of Per-respondent survey cost versus N_Surveys:
D:A148: [W36] '   (N_Surveys varies from N_Surveys/2 to N_Surveys*3)
D:A150: [W36] 'Macro_Resp_N:
D:A151: [W36] '{goto}temp_n~
D:A152: [W36] '+N_SURVEYS~
D:A153: [W36] '{edit}{calc}~
D:A154: [W36] '{if iterate="Y"}{branch Iterate_Resp_N}
D:A155: [W36] '{goto}Resp_n~{u 5}{d 5}{L}{r}
D:A156: [W36] '/rndResp_N~
D:A157: [W36] '/rncResp_N~{d 5}{r}~
D:A158: [W36] '{r}/re{d 7}{end}{r}~
D:B158: [W36] 'Iterate_Resp_N:
D:A159: [W36] '{let N_Surveys,.5*Temp_N}~
D:B159: [W36] '{let N_Surveys,.5*Temp_N}~
D:A160: [W36] '{goto}Resp_n~{L}{end}{r}{u 5}{d 5}
D:B160: [W36] '{goto}Resp_n~{L}{u 5}{d 5}
D:A161: [W36] '{r}+Survey_Cost/N_Surveys~
D:B161: [W36] '{end}{r}{r}+Survey_Cost/N_Surveys~
D:A162: [W36] '{edit}{calc}~
```

```
D:B162: [W36] '{edit}{calc}~
D:A163: [W36] '{L}0.5*Temp_N~{edit}{calc}~{r}
D:B163: [W36] '{let N_Surveys,Temp_N}~
D:A164: [W36] '{let N_Surveys,Temp_N}~
D:B164: [W36] '{d}+Survey_Cost/N_surveys~
D:A165: [W36] '{d}+Survey_Cost/N_Surveys~
D:B165: [W36] '{edit}{calc}~
D:A166: [W36] '{edit}{calc}~
D:B166: [W36] '{let N_Surveys,1.5*Temp_N}~
D:A167: [W36] '{L}+Temp_N~{edit}{calc}~{r}
D:B167: [W36] '{d}+Survey_Cost/N_surveys~
D:A168: [W36] '{let N_Surveys,1.5*Temp_N}~
D:B168: [W36] '{edit}{calc}~
D:A169: [W36] '{d}+Survey_Cost/N_surveys~
D:B169: [W36] '{let N_Surveys,2*Temp_N}~
D:A170: [W36] '{edit}{calc}~
D:B170: [W36] '{d}+Survey_Cost/N_Surveys~
D:A171: [W36] '{L}1.5*Temp_N~{edit}{calc}~{r}
D:B171: [W36] '{edit}{calc}~
D:A172: [W36] '{let N_Surveys,2*Temp_N}~
D:B172: [W36] '{let N_Surveys,2.5*Temp_N}~
D:A173: [W36] '{d}+Survey_Cost/N_Surveys~
D:B173: [W36] '{d}+Survey_Cost/N_Surveys~
D:A174: [W36] '{edit}{calc}~
D:B174: [W36] '{edit}{calc}~
D:A175: [W36] '{L}2*Temp_N~{edit}{calc}~{r}
D:B175: [W36] '{let N_Surveys,3*Temp_N}~
D:A176: [W36] '{let N_Surveys,2.5*Temp_N}~
D:B176: [W36] '{d}+Survey_Cost/N_Surveys~
D:A177: [W36] '{d}+Survey_Cost/N_Surveys~
D:B177: [W36] '{edit}{calc}~
D:A178: [W36] '{edit}{calc}~
D:B178: [W36] '{let N_Surveys,Temp_N}~
D:A179: [W36] '{L}2.5*Temp_N~{edit}{calc}~{r}
D:B179: [W36] '{goto}Resp_n~{L}{u 5}{d 5}
D:A180: [W36] '{let N_Surveys,3*Temp_N}~
D:B180: [W36] '/rncResp_n~{end}{l}{r}.{end}{r}~
D:A181: [W36] '{d}+Survey_Cost/N_Surveys~
D:B181: [W36] '{goto}Resp_N~{L}{u 5}
D:A182: [W36] '{edit}{calc}~
D:B182: [W36] '{goto}Legend_Resp_N~
D:A183: [W36] '{L}3*Temp_N~{edit}{calc}~{r}
D:B183: [W36] '{L}{U 2}{end}{r}{d 2}
D:A184: [W36] '{let N_Surveys,Temp_N}~
D:B184: [W36] '{GetLabel "Please enter text for this graph's Legend:  ",@CellPointer("coord")}
D:A185: [W36] '{goto}Legend_Resp_N~
D:B185: [W36] '{goto}Legend_Resp_N~
D:A186: [W36] '{GetLabel "Please enter text for this graph's Legend:  ",Legend_Resp_N}
D:B186: [W36] '{graphon Resp_N_Gr2,nodisplay}
D:A187: [W36] '{graphon Resp_N_Gr,nodisplay}
D:B187: [W36] '/gg{end}{L}{end}{r}~cvq
D:A188: [W36] '/gots{esc}{?}~q
D:B188: [W36] '/xmMenu1~
D:A189: [W36] 'g{end}{L}{end}{r}~c
D:A190: [W36] 'ncResp_N_Gr2~vq
D:A191: [W36] '/xmMenu1~
D:A199: [W36] 'Graph of Per-Respondent survey cost versus Administration Method:
D:A200: [W36] '    (Group admin, Mail survey, Telephone survey, and Microcomputer)
D:A202: [W36] 'Macro_Resp_Adm:
D:A203: [W36] '{goto}Temp_Admin~
D:A204: [W36] '+Admin_Method~
D:A205: [W36] '{Edit}{calc}~
D:A206: [W36] '{if iterate="Y"}{branch Iter_Resp_Adm}
D:A207: [W36] '{goto}Resp_Adm~{L}{r}{u 5}{d 5}
D:A208: [W36] '/rndResp_Adm~
D:B208: [W36] 'Iter_Resp_Adm:
D:A209: [W36] '/rncResp_Adm~{d 3}{r}~
D:B209: [W36] '{goto}Resp_Adm~{L}{u 5}{d 5}
D:A210: [W36] '{r}/re{d 5}{end}{r}~
D:B210: [W36] '{let Admin_method,"G"}~
D:A211: [W36] '{let Admin_method,"G"}~
D:B211: [W36] '{end}{r}{r}+Survey_Cost/N_Surveys~
```

```
D:A212: [W36] '{goto}Resp_Adm~{L}{end}{r}{u 5}{d 5}
D:B212: [W36] '{edit}{calc}~
D:A213: [W36] '{r}+Survey_Cost/N_Surveys~
D:B213: [W36] '{let Admin_method,"M"}~
D:A214: [W36] '{edit}{calc}~
D:B214: [W36] '{d}+Survey_Cost/N_Surveys~
D:A215: [W36] '{let Admin_method,"M"}~
D:B215: [W36] '{edit}{calc}~
D:A216: [W36] '{d}+Survey_Cost/N_Surveys~
D:B216: [W36] '{let Admin_method,"T"}~
D:A217: [W36] '{edit}{calc}~
D:B217: [W36] '{d}+Survey_Cost/N_Surveys~
D:A218: [W36] '{let Admin_method,"T"}~
D:B218: [W36] '{edit}{calc}~
D:A219: [W36] '{d}+Survey_Cost/N_Surveys~
D:B219: [W36] '{let Admin_method,"C"}~
D:A220: [W36] '{edit}{calc}~
D:B220: [W36] '{d}+Survey_Cost/N_Surveys~
D:A221: [W36] '{let Admin_method,"C"}~
D:B221: [W36] '{edit}{calc}~
D:A222: [W36] '{d}+Survey_Cost/N_Surveys~
D:B222: [W36] '{goto}Admin_Method~
D:A223: [W36] '{edit}{calc}~
D:B223: [W36] '+Temp_Admin~
D:A224: [W36] '{Let Admin_Method,+Temp_Admin}~
D:B224: [W36] '{edit}{calc}~
D:A225: [W36] '{goto}Legend_Resp_Adm~
D:B225: [W36] '{goto}Resp_Adm~{L}{r}{u 5}{d 5}
D:A226: [W36] '{GetLabel "Please enter text for this graph's Legend: ",Legend_Resp_Adm}
D:B226: [W36] '/rndResp_Adm~
D:A227: [W36] '{graphon Resp_Adm_Gr,nodisplay}
D:B227: [W36] '/rncResp_Adm~{end}{l}{end}{r}{d 3}~
D:A228: [W36] '/gots{esc}{?}~q
D:B228: [W36] '{goto}Resp_Adm~{L}{u 5}
D:A229: [W36] 'g{end}{L}{end}{r}~c
D:B229: [W36] '{goto}Legend_Resp_Adm~
D:A230: [W36] 'ncResp_Adm_Gr2~vq
D:B230: [W36] '{L}{U 2}{end}{r}{d 2}
D:A231: [W36] '/xmMenu1~
D:B231: [W36] '{GetLabel "Please enter text for this graph's Legend: ",@CellPointer("coord")}
D:B232: [W36] '{graphon Resp_Adm_Gr2,nodisplay}
D:B233: [W36] '/gg{end}{L}{end}{r}~cvq
D:B234: [W36] '/xmMenu1~
D:A251: (L) [W36] 'Costs_and_Labor/Wages submenu:  (cell name  WAGES )
D:A253: (L) [W36] '{goto}Programmer_rate~{L 2}{r 2}
D:A254: (L) [W36] '{getnumber "Hourly pay for computer programmers: ",programmer_rate}~
D:A255: (L) [W36] '{goto}Prof_rate~{L 2}{r 2}
D:A256: (L) [W36] '{getnumber "Hourly rate for consultants: ",Prof_rate}~
D:A257: (L) [W36] '{goto}Secty_rate~{L 2}{r 2}
D:A258: (L) [W36] '{getnumber "Hourly rate for secretaries: ",secty_rate}~
D:A259: (L) [W36] '{goto}Asst_rate~{L 2}{r 2}
D:A260: (L) [W36] '{getnumber "Hourly rate for Research Assistants: ",asst_rate}~
D:A261: (L) [W36] '{goto}Recr_rate~{L 2}{r 2}
D:A262: (L) [W36]
        '{getnumber "Hourly rate for computer survey administrators (Army Recruiters): ",recr_rate}~
D:A263: (L) [W36] '{goto}Telemkt_rate~{L 2}{r 2}
D:A264: (L) [W36] '{getnumber "Hourly rate for telemarketers: ",Telemkt_rate}~
D:A265: (L) [W36] '{goto}Clerical_rate~{L 2}{r 2}
D:A266: (L) [W36] '{Getnumber "Hourly rate for clerical workers: ",clerical_rate}~
D:A267: (L) [W36] '/xmCosts_and_labor~
D:A270: (L) [W36] 'costs_and_labor/Travel Expenses submenu:  (cell name TRAVEL )
D:A272: (L) [W36] '{goto}Per_DIem~{L 2}{r 2}
D:A273: (L) [W36] '{getnumber "Daily Per Diem rate: ",per_diem}~
D:A274: (L) [W36] '{goto}Site_travel~{L 2}{r 2}
D:A275: (L) [W36] '{getnumber "Cost of round trip travel to survey admin site: ",Site_TRavel}~
D:A276: (L) [W36] '{goto}Car_Rental~{L 2}{r 2}
D:A277: (L) [W36] '{getnumber "Daily car rental rate, including all auto expenses: ",Car_rental}~
D:A278: (L) [W36] '{goto}Tele_Travel~{L 2}{r 2}
D:A279: (L) [W36]
        '{getnumber "Round trip travel costs for trainer of telephone interviewers: ",Tele_travel}~
D:A280: (L) [W36] '/xmCosts_and_labor~
D:A282: (L) [W36] 'costs_and_labor/postage submenu  ( cell name POSTAGE )
```

```
D:A284: (L) [W36] '{goto}FIrst_class~{L 2}{r 2}
D:A285: (L) [W36] '{getnumber "Cost of postage for first-class letter:  ",First_class}~
D:A286: (L) [W36] '{goto}post_card~{L 2}{r 2}
D:A287: (L) [W36] '{getnumber "Cost of postage for a post card:  ",post_card}~
D:A288: (L) [W36] '{goto}Fed_Ex~{L 2}{r 2}
D:A289: (L) [W36] '{getnumber "Cost of overnight priority mail:  ",Fed_Ex}~
D:A290: (L) [W36] '{goto}Bulk_FEd_ex~{L 2}{R 2}
D:A291: (L) [W36] '{getnumber "Cost of overnight shipping a package:  ",Bulk_Fed_Ex}~
D:A292: (L) [W36] '{goto}Survey_postage~{L 2}{R 2}
D:A293: (L) [W36] '{getnumber "Postage cost to mail the survey packet:  ",Survey_Postage}~
D:A294: (L) [W36] '{goto}SASE~{L 2}{R 2}
D:A295: (L) [W36] '{getnumber "Postage cost for a self-addressed, stamped envelope:  ",SASE}~
D:A296: (L) [W36] '{goto}BRE~{L 2}{R 2}
D:A297: (L) [W36] '{getnumber "Postage cost for a business reply envelope:  ",BRE}~
D:A298: (L) [W36] '{goto}ship_to_site~{L 2}{R 2}
D:A299: (L) [W36] '{getnumber "Cost to bulk ship surveys to the administration site:  ",Ship_to_site}~
D:A300: (L) [W36] '{goto}ship_from_site~{L 2}{R 2}
D:A301: (L) [W36]
        '{getnumber "Cost to bulk ship unused surveys to project administrator:  ",ship_from_site}~
D:A302: (L) [W36] '{goto}return_surveys~{L 2}{R 2}
D:A303: (L) [W36] '{getnumber "Cost to return completed surveys:  ",return_surveys}~
D:A304: (L) [W36] '/xmCosts_and_labor~
D:A307: (L) [W36] 'costs_and_labor/supplies submenu  ( cell name SUPPLIES )
D:A309: (L) [W36] '{goto}Env_#10~{L 2}{R 2}
D:A310: (L) [W36] '{getnumber "Cost of one #10 envelope:  ",Env_#10}~
D:A311: (L) [W36] '{goto}Letterhead~{L 2}{R 2}
D:A312: (L) [W36] '{getnumber "Cost of a sheet of letterhead stationery:  ",Letterhead}~
D:A313: (L) [W36] '{goto}Env_9x12~{L 2}{R 2}
D:A314: (L) [W36] '{getnumber "Cost of a 9-by-12-inch envelope:  ",env_9x12}~
D:A315: (L) [W36] '{goto}Print_card~{L 2}{R 2}
D:A316: (L) [W36] '{getnumber "Cost of printing one post card:  ",print_card}~
D:A317: (L) [W36] '{goto}Page_Print_cost~{L 2}{R 2}
D:A318: (L) [W36] '{getnumber "Cost of printing a letter:  ",page_print_cost}~
D:A319: (L) [W36] '{goto}disk_mailer~{L 2}{R 2}
D:A320: (L) [W36] '{getnumber "Cost of a diskette mailer:  ",disk_mailer}~
D:A321: [W36] '/xmCosts_and_labor~
D:A325: [W36] 'Other survey costs:  (cell name OTHER_COSTS )
D:A327: (L) [W36] '{goto}cost_diskette~{L 2}{R 2}
D:A328: (L) [W36] '{getnumber "Cost for one microcomputer diskette:  ",cost_diskette}~
D:A329: (L) [W36] '{goto}Incentive~{L 2}{R 2}
D:A330: (L) [W36] '{getnumber "Cost of the incentive for mail survey respondent:  ",Incentive}~
D:A331: (L) [W36] '{goto}mag_tape~{L 2}{R 2}
D:A332: (L) [W36] '{getnumber "Cost of a computer magnetic tape:  ",mag_tape}~
D:A333: [W36] '{goto}all_other_costs~
D:A334: [W36] '{getnumber "All other survey costs:  ",all_other_costs}~
D:A335: [W36] '/xmCosts_and_labor~
D:A339: (L) [W36] 'Macro to automatically enter all cost and time estimates:
D:A340: (L) [W36] '[  cell name   Auto_Mode  ]
D:A342: (L) [W36] '{goto}Sampl_decision~{L 2}{r 2}
D:A343: (L) [W36] '{getnumber "How many hours needed to determine sampling plan?  ",sampl_decision}~
D:A344: (L) [W36] '{goto}Sampl_Practical~{L 2}{r 2}
D:A345: (L) [W36] '{getnumber "How many hours needed to implement sampling plan?  ",Sampl_Practical}~
D:A346: (L) [W36] '{goto}Write_RFP~{L 2}{r 2}
D:A347: (L) [W36] '{getnumber "How many hours needed to write proposal?  ",Write_RFP}~
D:A348: (L) [W36] '{goto}Type_RFP~{L 2}{R 2}
D:A349: (L) [W36] '{getnumber "How many secretarial hours to type and copy the proposal?  ",Type_RFP}~
D:A350: (L) [W36] '{goto}Publish_RFP~{L 2}{R 2}
D:A351: (L) [W36] '{getnumber "How many secretarial hours to publish the RFP?  ",Publish_RFP}~
D:A352: (L) [W36] '{goto}Misc_RFP~{L 2}{r 2}
D:A353: (L) [W36]
        '{getnumber "How many secretarial hours to answer bidder questions, etc.?  ",Misc_RFP}~
D:A354: (L) [W36] '{goto}Process_bids~{L 2}{r 2}
D:A355: (L) [W36] '{getnumber "How many secretarial hours to handle the bids?  ",process_bids}~
D:A356: (L) [W36] '{goto}Evaluate_Bids~{l 2}{r 2}
D:A357: (L) [W36] '{getnumber "How many professional hours to evaluate the bids?  ",evaluate_bids}~
D:A358: (L) [W36] '{goto}deliv_secty~{l 2}{r 2}
D:A359: (L) [W36] '{getnumber "How much time to receive and process deliverables?  ",deliv_secty}~
D:A360: (L) [W36] '{goto}deliv_prof~{L 2}{r 2}
D:A361: (L) [W36] '{getnumber "How many professional hours to receive and process bids?  ",deliv_prof}~
D:A362: (L) [W36] '{goto}Info_Secty~{L 2}{r 2}
```

```
D:A363: (L) [W36]
        '{getnumber "How many secretarial hours to publish and/or disseminate project info?",
        info_secty}~
D:A364: (L) [W36] '{goto}Info_Prof~{L 2}{r 2}
D:A365: (L) [W36]
        '{getnumber "How many professional hours to publish and/or disseminate project info? ",
        info_prof}~
D:A366: (L) [W36] '{goto}Data_Anal_Hrs~{L 2}{r 2}
D:A367: (L) [W36] '{getnumber "How many programmer hours for all analyses? ",Data_Anal_Hrs}~
D:A368: (L) [W36] '{goto}Final_Secty~{L 2}{R 2}
D:A369: (L) [W36] '{getnumber "How many hours for secretaries to type the final report? ",final_secty}~
D:A370: (L) [W36] '{goto}final_prof~{L 2}{R 2}
D:A371: (L) [W36]
        '{getnumber "How many hours of professional time to write the final report? ",final_prof}~
D:A372: (L) [W36] '{goto}mgmt_other~{L 2}{R 2}
D:A373: (L) [W36] '{getnumber "Total of other project management expenses ",mgmt_other}~
D:A374: (L) [W36] '{goto}content_time~{L 2}{R 2}
D:A375: (L) [W36]
        '{getnumber "How many professional hours to determine survey content? ",content_time}~
D:A376: (L) [W36] '{goto}item_time~{L 2}{R 2}
D:A377: (L) [W36] '{getnumber "How much professional time to write the survey items? ",item_time}~
D:A378: (L) [W36] '{goto}secty_design~{L 2}{R 2}
D:A379: (L) [W36] '{getnumber "Hours of secretarial time to create survey drafts: ",secty_design}~
D:A380: (L) [W36] '{goto}asst_pilot~{L 2}{R 2}
D:A381: (L) [W36]
        '{getnumber "Total research assistant hours to administer, analyze the pilot survey ",
        asst_pilot}~
D:A382: (L) [W36] '{goto}secty_pilot~{L 2}{R 2}
D:A383: (L) [W36] '{getnumber "Hours of secretary time for pilot testing: ",secty_pilot}~
D:A384: (L) [W36] '{goto}prof_pilot~{L 2}{R 2}
D:A385: (L) [W36] '{getnumber "Hours of professional time for the pilot test: ",prof_pilot}~
D:A386: (L) [W36] '{goto}secty_revise~{L 2}{R 2}
D:A387: (L) [W36]
        '{getnumber "Secretarial hours needed to revise the survey after pilot testing: ",
        secty_revise}~
D:A388: (L) [W36] '{goto}prof_revise~{L 2}{R 2}
D:A389: (L) [W36] '{getnumber "Provessional hours to revise survey after pilot testing: ",prof_revise}~
D:A390: (L) [W36] '{goto}create_other~{L 2}{R 2}
D:A391: (L) [W36] '{getnumber "Total other expenses relating to survey creation: ",create_other}~
D:A392: (L) [W36] '{goto}mockup_cost~{L 2}{R 2}
D:A393: (L) [W36] '{getnumber "Cost for scannable booklet mockup: ",mockup_cost}~
D:A394: (L) [W36] '{goto}color_cost~{L 2}{R 2}
D:A395: (L) [W36] '{getnumber "Cost of adding color printing to the survey booklet: ",color_cost}~
D:A396: (L) [W36] '{goto}litho_cost~{L 2}{R 2}
D:A397: (L) [W36] '{getnumber "Cost of adding litho codes to the the booklet: ",litho_cost}~
D:A398: (L) [W36] '{goto}type_cost~{L 2}{R 2}
D:A399: (L) [W36] '{getnumber "Cost to typeset the scannable booklet ",type_cost}~
D:A400: (L) [W36] '{goto}print_cost~{L 2}{R 2}
D:A401: (L) [W36] '{getnumber "What is the per-booklet printing cost? ",print_cost}~
D:A402: [W36] '{goto}scan_bk_other~{L 2}{R 2}
D:A403: [W36] '{getnumber "Total other costs for publishing scannable booklets: ",Scan_bk_other}~
D:A404: (L) [W36] '{goto}scan_program~{L 2}{R 2}
D:A405: (L) [W36] '{getnumber "Cost to program the scanner for this survey ",scan_program}~
D:A406: (L) [W36] '{goto}booklet_scan~{L 2}{R 2}
D:A407: (L) [W36] '{getnumber "Per-booklet cost for scanning the survey: ",booklet_scan}~
D:A408: (L) [W36] '{goto}keyp_type_hrs~{L 2}{R 2}
D:A409: (L) [W36] '{getnumber "Time needed to type one page of the survey ",keyp_type_hrs}~
D:A410: (L) [W36] '{goto}keyp_print~{L 2}{R 2}
D:A411: (L) [W36] '{getnumber "Cost for printing one page of the survey ",keyp_print}~
D:A412: (L) [W36] '{goto}bind_booklet~{L 2}{R 2}
D:A413: (L) [W36] '{getnumber "Cost for stapling or binding the survey booklet ",bind_booklet}~
D:A414: (L) [W36] '{goto}Keyp_program~{L 2}{R 2}
D:A415: (L) [W36] '{getnumber "Cost of creating a data entry program ",keyp_program}~
D:A416: (L) [W36] '{goto}item_key_cost~{L 2}{R 2}
D:A417: (L) [W36] '{getnumber "Data entry cost for one keystroke: ",item_key_cost}~
D:A418: (L) [W36] '{goto}hours_to_train~{L 2}{R 2}
D:A419: (L) [W36] '{getnumber "N of hours to train survey administrators ",hours_to_train}~
D:A420: (L) [W36] '{goto}admin_days~{L 2}{R 2}
D:A421: (L) [W36]
        '{getnumber "For how many days will the survey be administered at each site? ",admin_days}~
D:A422: (L) [W36] '{goto}n_admins~{L 2}{R 2}
D:A423: (L) [W36] '{getnumber "At how many sites will the survey be administered? ",n_admins}~
```

```
D:A424: (L) [W36] '{goto}daily_adm_rate~{L 2}{R 2}
D:A425: (L) [W36] '{getnumber "What daily pay rate will each administrator receive?  ",daily_adm_rate}~
D:A426: (L) [W36] '{goto}n_administr~{L 2}{R 2}
D:A427: (L) [W36] '{getnumber "How many administrators are needed at each site?  ",n_administr}~
D:A428: (L) [W36] '{goto}pc_itms_per_hr~{L 2}{R 2}
D:A429: (L) [W36] '{getnumber "Speed of programming items into PC survey software:  ",PC_itms_per_hr}~
D:A430: (L) [W36] '{goto}instr_book_hrs~{L 2}{R 2}
D:A431: (L) [W36]
        '{getnumber "Time needed to write instructions for survey administrators:  ",instr_book_hrs}~
D:A432: (L) [W36] '{goto}instr_bk_misc~{L 2}{R 2}
D:A433: (L) [W36] '{getnumber "Other costs to print instruction books:  ",instr_bk_misc}~
D:A434: (L) [W36] '{goto}expl_hrs~{L 2}{R 2}
D:A435: (L) [W36] '{getnumber "Time needed to explain the survey to respondents:  ",expl_hrs}~
D:A436: (L) [W36] '{goto}N_months~{L 2}{R 2}
D:A437: (L) [W36] '{getnumber "For how many months will the survey be administered?  ",n_months}~
D:A438: (L) [W36] '{goto}n_stations~{L 2}{R 2}
D:A439: (L) [W36] '{getnumber "At how many stations will the survey be administered?  ",n_stations}~
D:A440: (L) [W36] '{goto}hrs_train_recr~{L 2}{R 2}
D:A441: (L) [W36]
        '{getnumber "How much time is needed to train a survey administrator?  ",hrs_train_recr}~
D:A442: (L) [W36] '{goto}N_recruiter~{L 2}{R 2}
D:A443: (L) [W36] '{getnumber "How many survey administrators will need to be trained?  ",n_recruiter}~
D:A444: (L) [W36] '{goto}disk_copy_hrs~{L 2}{R 2}
D:A445: (L) [W36]
        '{getnumber "Programmer time needed to copy survey to each diskette?  ",disk_copy_hrs}~
D:A446: (L) [W36] '{goto}disk_data_merge~{L 2}{R 2}
D:A447: (L) [W36]
        '{getnumber "Cost for all aspects of managing and aggregating survey data:  ",disk_data_merge}~
D:A448: (L) [W36] '{goto}cover_ltr_hrs~{L 2}{R 2}
D:A449: (L) [W36] '{getnumber "Professional time needed to write the cover letter:  ",cover_ltr_hrs}~
D:A450: (L) [W36] '{goto}write_card_hrs~{L 2}{R 2}
D:A451: (L) [W36] '{getnumber "Professional time to write follow-up post cards  ",write_card_hrs}~
D:A452: (L) [W36] '{goto}mail_list~{L 2}{R 2}
D:A453: (L) [W36] '{getnumber "What is the cost for the mailing list?  ",mail_list}~
D:A454: (L) [W36] '{goto}env_per_hr~{L 2}{R 2}
D:A455: (L) [W36] '{getnumber "How many envelopes can be addressed per hour?  ",env_per_hr}~
D:A456: (L) [W36] '{goto}stuffed_per_hr~{L 2}{R 2}
D:A457: (L) [W36] '{getnumber "How many envelopes can be stuffed per hour?  ",stuffed_per_hr}~
D:A458: (L) [W36] '{goto}resp_rate_1~{L 2}{R 2}
D:A459: (L) [W36] '{getnumber "Expected response rate after first mailing:  ",resp_rate_1}~
D:A460: (L) [W36] '{goto}resp_rate_2~{L 2}{R 2}
D:A461: (L) [W36] '{getnumber "Expected response rate after reminder card is sent:  ",resp_rate_2}~
D:A462: (L) [W36] '{goto}resp_rate_3~{L 2}{R 2}
D:A463: (L) [W36]
        '{getnumber "Expected respose rate before sending final follow-up letter  ",resp_rate_3}~
D:A464: (L) [W36] '{goto}mail_resp_rate~{L 2}{R 2}
D:A465: (L) [W36] '{getnumber "What overall response rate is expected?  ",mail_resp_rate}~
D:A466: (L) [W36] '{goto}n_interv~{L 2}{R 2}
D:A467: (L) [W36] '{getnumber "How many telephone interviewers are needed?  ",n_interv}~
D:A468: (L) [W36] '{goto}tel_item_per_hr~{L 2}{R 2}
D:A469: (L) [W36]
        '{getnumber "N of items per hour for programming interview software  ",tel_item_per_hr}~
D:A470: (L) [W36] '{goto}hourly_long_d~{L 2}{R 2}
D:A471: (L) [W36] '{getnumber "What is the hourly cost of long distance telephone?  ",hourly_long_d}~
D:A472: (L) [W36] '{goto}hrs_train_tele~{L 2}{R 2}
D:A473: (L) [W36] '{getnumber "How many hours needed to train an interviewer?  ",hrs_train_tele}~
D:A474: (L) [W36] '{goto}hrs_per_survey~{L 2}{R 2}
D:A475: (L) [W36] '{getnumber "Time needed to complete one telephone survey  ",hrs_per_survey}~
D:A476: (L) [W36] '{goto}phone_list~{L 2}{R 2}
D:A477: (L) [W36] '{getnumber "What is the cost of the telephone list?  ",Phone_list}~
D:A478: (L) [W36] '{goto}tele_data_merge~{L 2}{R 2}
D:A479: (L) [W36] '{getnumber "How much does it cost to process survey data?  ",tele_data_merge}~
D:A480: (L) [W36] '{goto}write_tape~{L 2}{R 2}
D:A481: (L) [W36] '{getnumber "Cost of writing a magnetic tape:  ",write_tape}~
D:A482: (L) [W36] '{goto}item_code~{L 2}{R 2}
D:A483: (L) [W36]
        '{getnumber "What is the cost to code one open-ended item on one survey?  ",item_code}~
D:A484: (L) [W36] '{goto}type_open_ended~{L 2}{R 2}
D:A485: (L) [W36]
        '{getnumber "What is the cost to transcribe one open-ended item from one survey?  ",
        type_open_ended}~
D:A486: (L) [W36] '{goto}code_book_item~{L 2}{R 2}
```

```
D:A487: (L) [W36] '{getnumber "What is the cost per item of creating the code book?  ",code_book_item}~
D:A488: (L) [W36] '{goto}SD_likert-7~{L 2}{R 2}
D:A489: (L) [W36]
        '{getnumber "What is the standard deviation for a 7-point Likert item?  ",SD_likert-7}~
D:A490: (L) [W36] '{goto}sd_likert-5~{L 2}{R 2}
D:A491: (L) [W36]
        '{getnumber "What is the standard deviation for a 5-point Likert item?  ",sd_likert-5}~
D:A492: (L) [W36] '{goto}sd_Likert-4~{L 2}{R 2}
D:A493: (L) [W36]
        '{getnumber "What is the standard deviation for a 4-point Likert item?  ",sd_likert-4}~
D:A494: (L) [W36] '{goto}propn_yes-no~{L 2}{R 2}
D:A495: (L) [W36] '{getnumber "What proportion (NOT percent) will answer YES or NO?  ",propn_yes-no}~
D:A496: (L) [W36] '{goto}propn_demog~{L 2}{R 2}
D:A497: (L) [W36]
        '{getnumber "What proportion (NOT percent) will be in each demographic category?  ",
        propn_demog}~
D:A498: (L) [W36] '{goto}OHD_management~{L 2}{R 2}
D:A499: (L) [W36]
        '{getnumber "What is the overhead multiplier for project management costs?  ",ohd_management}~
D:A500: (L) [W36] '{goto}OHD_CReation~{L 2}{R 2}
D:A501: (L) [W36]
        '{getnumber "What is the overhead multiplier for survey creation costs?  ",ohd_creation}~
D:A502: (L) [W36] '{goto}OHD_Publish~{L 2}{R 2}
D:A503: (L) [W36]
        '{getnumber "What is the overhead multiplier for survey publication costs?  ",ohd_publish}~
D:A504: (L) [W36] '{goto}ohd_administer~{L 2}{R 2}
D:A505: (L) [W36]
        '{getnumber "What is the overhead multiplier for survey administration costs?  ",
        OHD_administer}~
D:A506: (L) [W36] '{goto}OHD_data~{L 2}{R 2}
D:A507: (L) [W36] '{getnumber "What is the overhead multiplier for data capturing costs?  ",OHD_data}~
D:A508: [W36] '{goto}A:a1~
D:A509: (L) [W36] '/xmMenu1~
```

Level E: Cell Formulas

```
E:A2: (L) 'This workwheet contains data bases for graphing
E:A3: (L) \=
E:B3: (L) [W14] \=
E:C3: (L) [W15] \=
E:D3: (L) [W15] \=
E:E3: (L) [W15] \=
E:A9: (L) 'Compare costs of different survey admin methods:
E:A10: (L) 'Graph name:  Cost_Adm
E:A12: (L) '
E:B12: (L) [W14] 'Admin. Method
E:C12: (L) [W15] "Cost
E:D12: (L) [W15] "Cost
E:E12: (L) [W15] "Cost
E:F12: (L) [W15] "Cost
E:G12: (L) [W15] "Cost
E:H12: (L) [W15] "Cost
E:A13: (L) '
E:B13: (F2) [W14] "Group
E:A14: (L) '
E:B14: (F2) [W14] "Mail
E:A15: (L) '
E:B15: (F2) [W14] "Telephone
E:A16: (L) '
E:B16: (F2) [W14] "Computer
E:A17: (L) '
E:B18: (L) [W14] 'Legend:
E:B20: (L) [W14] 'Temp_Admin
E:C20: (F0) [W15] 'G
E:A23: (L) 'Compare costs for different sample sizes:
E:A24: (L) 'Graph name:  Cost_N
E:A26: (L) '
E:B26: (F2) [W14] "N_Surveys
E:C26: (L) [W15] "Cost
E:D26: (L) [W15] "Cost
E:E26: (L) [W15] "Cost
E:F26: (L) [W15] "Cost
```

```
E:G26: (L) [W15] "Cost
E:H26: (L) [W15] "Cost
E:A27: (L) '
E:B27: (F0) [W14] 1500
E:A28: (L) '
E:B28: (F0) [W14] 3000
E:A29: (L) '
E:B29: (F0) [W14] 4500
E:A30: (L) '
E:B30: (F0) [W14] 6000
E:A31: (L) '
E:B31: (F0) [W14] 7500
E:A32: (L) '
E:B32: (F0) [W14] 9000
E:A34: (L) '
E:B34: (L) [W14] 'Legend:
E:B36: (L) [W14] 'Temp_N
E:C36: (F0) [W15] 3000
E:D36: (L) [W15] '   (Specified number of completed surveys)
E:A40: (L) 'Compare sampling error for different sample sizes:
E:A41: (L) 'Graph name:  Error_N
E:A43: (L) '
E:B43: (L) [W14] "N_Surveys
E:C43: (F0) [W15] "Error
E:D43: (F0) [W15] "Error
E:E43: (F0) [W15] "Error
E:F43: (F0) [W15] "Error
E:G43: (F0) [W15] "Error
E:H43: (F0) [W15] "Error
E:A44: (L) '
E:B44: (F0) [W14] 1500
E:A45: (L) '
E:B45: (F0) [W14] +N_SURVEYS
E:A46: (L) '
E:B46: (F0) [W14] +N_SURVEYS*1.5
E:A47: (L) '
E:B47: (F0) [W14] +N_SURVEYS*2
E:A48: (L) '
E:B48: [W14] +N_SURVEYS*2.5
E:A49: (L) '
E:B49: (F0) [W14] +N_SURVEYS*3
E:B51: (L) [W14] 'Legend:
E:B53: (L) [W14] 'Temp_SD
E:C53: (F2) [W15] @VLOOKUP(ITEM_TYPE,ITEM_SD,@IF(SAMP_METH="R",1,@IF(SAMP_METH="S",2,3)))
E:D53: (F2) [W15] '  @VLOOKUP(ITEM_TYPE,ITEM_SD,@IF(SAMP_METH="R",1,@IF(SAMP_METH="S",2,3)))
E:B55: (L) [W14] 'SD lookup table ITEM_SD:
E:C56: (F2) [W15] "R
E:D56: (F2) [W15] "S
E:E56: (F2) [W15] "C
E:B57: (L) [W14] "4
E:C57: (F2) [W15] +SD_LIKERT-4
E:D57: (F2) [W15] +SD_LIKERT-4*STRATUM_SD_DECR
E:E57: (F2) [W15] (SD_CLUS_5/@SQRT(1/N_CLUS_SAMP-1/N_CLUS_TOT))*SD_LIKERT-4/SD_LIKERT-5
E:B58: (L) [W14] "5
E:C58: (F2) [W15] +SD_LIKERT-5
E:D58: (F2) [W15] +SD_LIKERT-5*STRATUM_SD_DECR
E:E58: (F2) [W15] +SD_CLUS_5/@SQRT(1/N_CLUS_SAMP-1/N_CLUS_TOT)
E:B59: (L) [W14] "7
E:C59: (F2) [W15] +SD_LIKERT-7
E:D59: (F2) [W15] +SD_LIKERT-7*STRATUM_SD_DECR
E:E59: (F2) [W15] (SD_CLUS_5/@SQRT(1/N_CLUS_SAMP-1/N_CLUS_TOT))*SD_LIKERT-7/SD_LIKERT-5
E:B60: (L) [W14] "Y
E:C60: (F2) [W15] 100*@SQRT(PROPN_YES-NO*(1-PROPN_YES-NO))
E:D60: (F2) [W15] 100*@SQRT(PROPN_YES-NO*(1-PROPN_YES-NO))*STRATUM_SD_DECR
E:E60: (F2) [W15] (SD_CLUS_5/@SQRT(1/N_CLUS_SAMP-1/N_CLUS_TOT))*C60/SD_LIKERT-5
E:B61: (F2) [W14] "D
E:C61: (F2) [W15] 100*@SQRT(PROPN_DEMOG*(1-PROPN_DEMOG))
E:D61: (F2) [W15] 100*@SQRT(PROPN_DEMOG*(1-PROPN_DEMOG))*STRATUM_SD_DECR
E:E61: (F2) [W15] (SD_CLUS_5/@SQRT(1/N_CLUS_SAMP-1/N_CLUS_TOT))*C61/SD_LIKERT-5
E:C63: (L) [W15] 'Note:  SDs for cluster items can be impossible
E:C64: (L) [W15] '       (e.g. SD(Yes/no)>50% ) if unreasonable estimates
E:C65: (L) [W15] '       (e.g. of PROPN_yes-no) are entered.  The plots
```

```
E:C66: (L) [W15] '       should still be acceptable unless the estimates
E:C67: (L) [W15] '       are too much in error.
E:A71: (L) 'Compare per-respondent costs of different survey admin methods:
E:A72: (L) 'Graph name:  Resp_Adm
E:A74: (L) '
E:B74: (L) [W14] 'Admin. Method
E:C74: (L) [W15] "Cost
E:D74: (L) [W15] "Cost
E:E74: (L) [W15] "Cost
E:F74: (L) [W15] "Cost
E:G74: (L) [W15] "Cost
E:H74: (L) [W15] "Cost
E:A75: (L) '
E:B75: (F2) [W14] "Group
E:A76: (L) '
E:B76: (F2) [W14] "Mail
E:A77: (L) '
E:B77: (F2) [W14] "Telephone
E:A78: (L) '
E:B78: (F2) [W14] "Computer
E:A79: (L) '
E:A80: (L) '
E:B80: (L) [W14] 'Legend:
E:A83: (L) 'Compare per-respondent costs for different sample sizes:
E:A84: (L) 'Graph name:  Resp_N
E:A86: (L) '
E:B86: (F2) [W14] "N_Surveys
E:C86: (L) [W15] "Cost
E:D86: (L) [W15] "Cost
E:E86: (L) [W15] "Cost
E:F86: (L) [W15] "Cost
E:G86: (L) [W15] "Cost
E:H86: (L) [W15] "Cost
E:A87: (L) '
E:B87: (F0) [W14] 1500
E:A88: (L) '
E:B88: (F0) [W14] 3000
E:A89: (L) '
E:B89: (F0) [W14] 4500
E:A90: (L) '
E:B90: (F0) [W14] 6000
E:A91: (L) '
E:B91: (F0) [W14] 7500
E:A92: (L) '
E:B92: (F0) [W14] 9000
E:A94: (L) '
E:B94: (L) [W14] 'Legend:
```